FARMERS DIGEST

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The Farmer's Digest

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New Jersey

Your magazine is worth many times the money it costs. It is intelligently edited, understandable and frequently very valuable with scientific articles on soils and crops. It surely pays the farmers to digest them.

Farmer

●

Pennsylvania

The digest is surely a wonderful magazine. I enjoy it very much for its compactness and scope. How about some more articles on building up soil and methods of adding humus.

Farmer

"I will say this for the little magazine. My boys take it off the shelf and read it as often as any other, and I like to see it, for I know they are getting something good and not just wasting time."

Illinois Agricultural Teacher

●

Stage Junction, Va.

"I became acquainted with Farmer's Digest while attending VPI and have found it to be an invaluable publication for the practical farmer. I believe no other farm magazine can compare with it in usefulness."

T. K. L.

●

Madison, Wis.

"I have enjoyed Farmer's Digest so very completely that I am wondering if it is possible to obtain all the issues from 1945 to the present, as I would like to make a complete library of them. I think it is the greatest farm magazine on the market."

Farm Agronomist

●

Illinois

Thank you for Farmer's Digest. We enjoy the articles very much—it is a great help to have selections from the different good magazines when one is so busy.

Farm Manager

●

Oregon

For the past year I have received Farmer's Digest along with many other magazines for the reading library of my Vocational Agricultural department. Its scope of subjects, concise descriptions of information and ease of reading has been enjoyed by the students. Because of this appeal to the boys and its mass of practical helps, I want to consider using Farmer's Digest as a periodical reading course . . .

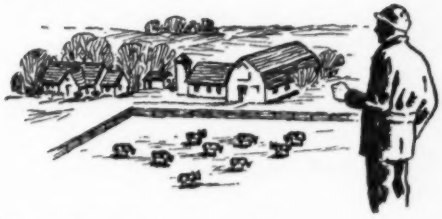
Agricultural Instructor

The Farmers Digest

Volume 16 April 1953 Number 10

Professional Farm Managers Cultivate Profit

Absentee owners turn to management firms who now supervise 10,000 farms



Condensed from The Wall Street Journal

Victor J. Hillery

A COLLEGE needed help to profitably operate 20 farms which had been donated to its endowment fund.

A Honolulu resident with $80,000 to invest wanted someone to select, buy and run a choice Iowa farm for him.

A Quincy, Illinois, shoeshine boy, who found himself the owner of a Missouri farm, wondered what to do about it.

Each of these absentee landowners turned to members of one of the newest professions—farm management. This is the science of organizing and operating a farm in the most efficient and continuously profitable manner possible.

Today at least 10,000 farms, comprising over five million acres, are under the supervision of professional farm managers, who make their services available to more than one client. This is only a tiny segment, of course, of the nation's more than 5.3 million farms. But the segment has expanded 25 per cent since 1947. And the profession reports its services are being enlisted by more

Reprinted by permission from The Wall Street Journal
Chicago 90, Illinois

and more individuals and organizations who own but do not operate more than a fourth of all United States farms.

The management experts don't actually run your farm for you in the sense of supplying on-the-spot manpower — that's left to your tenant. But a representative of the management firm visits the farm from one to four times a month during the April to September growing season and at longer intervals during the remainder of the year. After each visit a report is submitted to the owner.

Clients in Every State

The fee charged by most farm managers is 10 per cent of the owner's gross return, although some charge seven per cent; some also have a yearly minimum, such as $125 for a grain farm and $300 for a livestock farm.

D. Howard Doane, a pioneer in the profession and present chairman of the Doane Agricultural Service, Inc., St. Louis, declares: "Our clients live in every state of the union. They consist of individuals, banks, insurance companies, colleges and universities, church organizations, a children's home, a labor union and at one time (unknown to us) a gangster."

His company, which started in 1919, now has about 50 farm managers working out of 25 district offices. In about 18 states they manage over 1,000 farms, ranging from a five acre mushroom farm in a cave to a 20,000 acre cotton plantation. Farms under their supervision now total over 280,000 acres, which is about 30 per cent greater than a year ago and at least double the number at the end of World War II.

Farmers National Co. of Omaha, another of the large companies in this field, says the number of its managed farms has climbed to 1,687 from 1,315 five years ago. The 400,000 acres on which its 33 managers are now directing the raising of grain and livestock are mainly in the corn belt extending from Illinois to Colorado. This firm now has on hand a $150,000 backlog in orders from investors who wish to put their money in farms.

"I think we've just begun to scratch the surface," says Bruce Russell, president.

Some Smaller Specialists

Smaller firms also are finding greener pastures for their activities. J. M. Dowell, senior partner of the Do-Well Agriculture Service, Champaign, Illinois, says his group added a third manager last year. The company supervises 50 farms containing 15,000 acres in east central Illinois; in 1947 it was directing only 30 farms. Greene Farm Management Service, Peoria, Illinois, boosted the number of farms under its management 33 per cent in the last five years; its four man staff pres-

ently handles 100 farms in a 75 mile radius of Peoria.

Individual managers, in business for themselves, find their activities growing, too. H. E. Stalcup of Storm Lake, Iowa, says the number of farms under his direction has increased about 25 per cent since 1947. He is currently managing 29 farms (about 6,000 acres) in the Storm Lake area.

About 90 per cent of all professional managers belong to the American Society of Farm Managers and Rural Appraisers. This group has 877 members, including some college instructors, research and government men and agriculture experts employed by banks as advisers.

Management Principles

When a management firm assumes the supervision of a farm, says Farmers National's Mr. Russell, it applies to that land an expertness in taxes, insurance, soil fertility, drainage, crop cultivation and rotation, surveying, farm construction and machinery and marketing.

"It's the application of sound business principles to farm operation," he explains. "If you own an apartment house you don't turn the management of it over to your tenants. But you'd be surprised at how many people leave the management of a $75,000 farm to a tenant.

"If we're worth retaining, we've got to be free," says Mr. Doane. By this, he explains, there's no point in hiring his firm unless it can boost the income of a farm at least high enough over previous levels to cover the fee.

These management men cite a batch of examples to show how their handiwork has helped farm incomes grow.

Keith Lewis, a Doane manager, had a soil building job when he took over a 200 acre Indiana grain farm. He installed a more progressive tenant. He also improved crop rotation, cultivated land formerly idle because of poor drainage, started a fertilization program, applied limestone, and p l a n t e d improved varieties of crops. In four years, corn production rose to 87.4 bushels an acre from 47.5 bushels, oats to 68.1 bushels from 45 bushels, soybeans to 28.7 bushels from 16.3 bushels. Income to the owner was hiked to $29.73 an acre from $17.52.

Yields Increased

A 200 acre Peoria County, Illinois farm was yielding about 50 bushels of corn an acre when the Greene Farm Management Service started supervising it in 1946. During the past three years, however, these acres—responding to a soil building program—have been yielding between 90 bushels to 100 bushels an acre; one 10 acre test strip burst forth with 115 bushels an acre. Mr. Stalcup was able to double the output of a run-down 80 acre farm he began

managing eight years ago near Storm Lake; it's now producing 65 to 70 bushels of corn and 50 to 60 bushels of oats per acre each year.

All these farms, of course, had soils that responded to fertility-building programs. Crop yields on some farmland cannot be boosted to high levels even though it is subjected to advanced soil improving techniques. This is especially true of land having a tight subsoil where water cannot soak through.

When a professional manager is assigned to farm with such poor soil, he will very often recommend that the owner either sell it immediately or improve the soil as much as possible and then sell it. A farm which is not suitable for investment by an absentee owner may provide an adequate living for an owner-operator.

On 50 average investment farms which Farmers National managed in five states during 1951 the owner's net income from the farm was 7.8 per cent on appraised value.

Superior Yields

Weather, of course, plays an important role in determining the size of the crop yields in any one year. But Doane, for example, can show how production on its farms outstrips county averages. In the six years prior to 1938 when Doane began managing nine farms (2,560 acres) in Christian County, Illinois, they had been yielding slightly more than 30 bushels of corn per acre, the same as the county average. During the six years from 1945 to 1950 the output of these farms averaged 65 bushels while the county average was about 56 bushels per acre.

Rex R. Bailey, Doane president, figures it takes from three to five years to materially increase the productivity of a farm that has been run down. During the first few years when this program is in progress, he explains, income from the farm may show no rise and may even fall; that's because of the increased number of acres planted with soil building legumes instead of corn and added fertilizer expenses.

One reason why professional farm managers can coax greater incomes from farms, they declare, is that they keep abreast of new agricultural techniques and immediately put them into practice. Last year the Do-Well Agricultural Service applied on 50 farms in Illinois a balanced fertilizer program developed by the University of Illinois agronomy department to boost yields on land which had already been subjected to long established fertility building treatment. Result: Do-Well found that each $1 invested in the balanced fertilizer program brought a return of $2 in higher crop yields.

Pricing Production

Managers also attempt to sell the crops each year when prices are at their highest levels. After the roast beef and apple pie had been put away at a staff luncheon last month of Farmers National, the headquarters people sat back to decide what advice to give their managers. The discussion led off with a resume by Gale T. Tucker, vice-president general manager, of reports from marketing publications and field men.

They weighed the factors affecting the price outlook and then agreed on this advice: On feed oats, sell in surplus areas (north central Iowa) at 80 cents a bushel or better because demand is not expected to improve there; in deficit areas (Nebraska and south Iowa) hold for anticipated later good demand for feed and seed. On corn, sell at prices of at least $1.45 a bushel in Iowa and $1.43 in Nebraska; this is 10 cents below Commodity Credit loan support prices, but if the grain is stored there will be shrinkage and also it will tie up cribs for the 1953 crop.

Growing Cotton Without Cultivation

One-fourth of an acre of cotton was planted in 20 inch rows at the Arkansas Cotton Branch Station in 1952. This area received no subsequent hoeing nor cultivation throughout the season.

Fertilizer was broadcast evenly over the area before planting at the rate of 800 pounds of 6-8-12 and 100 pounds of ammonium nitrate per acre, and was disked into the soil. Immediately after planting (on May 30) a float was run over the area to smooth the soil surface. An application of a pre-emergence herbicide was made to control grass and weeds.

The cotton remained reasonably grass-free throughout the season. The area was irrigated by sprinklers on July 7, July 23, and August 18. A total of approximately six inches of water was applied in the three irrigations.

The cotton grown in this manner produced 2,778 pounds of seed cotton per acre. The yield would probably have been higher had the cotton been planted a month earlier. The cost of the pre-emergence chemical amounted to about $20 per acre.

This is a preliminary experiment covering a single plot grown for only one year. The cotton was grown on land that was free from Johnson grass and other perennial weeds that can not be controlled by herbicides.

D. A. Hinkle

Dr. Sam Higginbottom

He stopped Communism cold . . .

Condensed from Breeder's Gazette

SOME of the speeches being delivered these days on behalf of a more enlightened United States foreign policy must sound like a long delayed echo to Sam Higginbottom, a retired Presbyterian missionary now living in Florida. It is as if the theory he was preaching 40 some years ago had somehow been amplified in time and was now coming back, loud and clear, as an imperative condition to world peace: "You can save men's souls only by saving their bodies first."

Dr. Higginbottom's friends will tell you that his work was a necessary forerunner to Point IV, to the Food and Agriculture Organization of the United Nations, and to all the other programs now directed toward raising living standards in the so-called backward countries. They will tell you that the product of Dr. Hig's life work is, in fact, the most encouraging evidence to date that abundance can be achieved, and with abundance, peace.

A big, shaggy man of massive energy, Sam Higginbottom is the founder of the Allahabad Agricultural Institute, an accredited Christian college just outside the city of Allahabad in north India. Heart of the college is a 600 acre demonstration farm which, since 1912, has been successfully experimenting with ways to make native tools more productive. Its most notable contribution is the "wah-wah" plow — named after the Indian farmer's exclamation of surprise—which is manufactured in the institute's own foundry and sold at cost, roughly the price of one bushel of wheat. The "wah-wah" is simply a small steel plowshare with moldboard bolted to a wooden beam. It opens a six inch furrow, small by American standards, but double the capacity of the traditional Indian plow, which is nothing more than a

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Spencer, Indiana

metal pointed stick with a handle. Because of it and similar tools, Indian farmers in the vicinity of Allahabad have been able to boost their production of wheat from eight bushels an acre to as high as 62. As a result, for the first time in history, some lowcaste families in India are getting enough to eat.

Moreover, Dr. Hig's work has apparently turned out to be India's strongest defense against Communism. There have been no Communist-inspired riots around Allahabad; there have been no famines for the Communists to exploit.

Born in rural England, reared in Wales, educated at Amherst and Princeton, Sam Higginbottom first arrived in India in 1903. He was 29, as eager a young evangelist as ever opened a prayer book, convinced that exhortation of the Word would bring the world to God. Six years later he was not so sure. He had seen too much hunger, too much poverty, too much disease. The painful truth was that the gospel could hope to win few converts among people who were starving.

By 1909, Sam was sure of what he had to do. He returned to America and at 35, with a wife and two children to support, enrolled as a freshman in the College of Agriculture at Ohio State University. For the next two years he worked feverishly. During the week he learned all he could about scientific farming. On Sundays he was busy trying to communicate his intense concern for India to any congregation that would offer him a pulpit. The congregations responded generously and in 1911 he was able to sail for India not only with a degree in agriculture, but with $30,000 in cash.

A year later Dr. Hig turned his first clod of earth on the demonstration farm at Allahabad—260 badly eroded acres crawling with gullies and eaten by thorn grass. He had only a handful of lowcaste menials to help him. Half the natives in the vicinity, it seemed, regarded coolie labor as beneath them; the other half were frankly suspicious. Curious and somewhat awed, most of them merely stood around and watched.

Dr. Hig made no special effort to tell his neighbors what he was doing, or why he was doing it. He knew better. He had already learned the lesson that 40 years later was to become the basic tenet in the United States government's bold new program for underdeveloped countries: You don't teach the "backward" people out of a book. You don't get anywhere preaching to them, nor by doing things for them. You can teach only by example. You can make real progress only when you teach them how to help themselves.

At first the natives called Sam Higginbottom "Pagal Sahib" — crazy man. They could not believe he could make things grow on soil that for years had been useless. In the face of certain drought, they did not believe anything could be done to guarantee a steady supply of milk or butter from undernourished cattle. So they stood and watched him dig long trenches, and fill them with manure, weeds and garbage. They saw him dig deep holes and fill them with fresh green fodder And they shook their heads sadly. "Pagal sahib"—crazy man.

It wasn't long, though. When their own cows turned lean and dry, they saw the institute's herd stay fat and productive. Miracle of miracles, lush fruits and vegetables came out of earth that never before had borne anything edible. Fields which theretofore had yielded only one crop a year began to produce three and four crops.

One day, wanting to demonstrate how deep plowing enables soil to hold moisture, Sam told some visitors, "We'll compare our field with that field yonder." Much to his surprise, he found the depth of moisture there as great as in his own field. "Forgive me," begged the native farmer, dropping to his knees. "I watched everything you did and, when you were not using your plows, I borrowed them from your foreman." From that time on, Sam knew he was on the right track.

Dr. Hig retired in 1944 and settled in Babson Park, Florida, where he promptly established the Christian Service Training Center for missionaries-to-be. Meanwhile, of course, the institute at Allahabad continues to expand. Today it has an enrollment of 300, and to its curriculum have been added courses in agricultural engineering, home economics, horticulture, agronomy, animal husbandry and dairying. The radius of its influence is widening steadily. — From *Minutes*, a magazine for policyholders published by Ohio Farm Bureau Federation.

American farmers now are producing 60 per cent more than they were 40 years ago, and are doing it with 20 per cent fewer man-hours of labor and only 11 per cent more harvested acres. Steel, chemicals and machine power have taken up most of the labor and acreage slack.

With the present cost of raising a hen, she must lay about 100 eggs a year before she can start paying off.

Practical Calf DEHORNER

Veterinarians like this simple, new tool

Condensed from American Agriculturist

A NEW device is now being made which greatly speeds up the unpleasant task of dehorning calves. Describing it in the Journal of the American Veterinary Medical Association, Dr. S. J. Roberts, professor of veterinary medicine at Cornell university, says it can be used to dehorn a two weeks to three months old calf in less than half a minute."

Dr. Roberts points out that where cows are confined about half the year, horn injuries are frequent and common. "Dehorning yearlings, two year olds and adult cows even when done under local anesthesia is unpleasant, hard and dirty and requires extra help," he says. "Farmers have been repeatedly encouraged to dehorn calves at an early age to make the operation simpler, easier and safer."

Farmers have not had too good results with various caustic methods due to it rubbing off on other animals, or to it being applied improperly or too late. The hot iron method is not satisfactory due to the fire hazard and because there are seldom enough calves of the proper age at one time to make the operation practical. The electric dehorner has been tried by a number of farmers but some delay too long before using it; others complain of the time the operation takes, and others believe it to be too painful.

The New York State Veterinary College Ambulatory Clinic has tried various calf dehorners for the past five years in an attempt to reduce the large number of adult cattle the clinic is requested to dehorn. He says that after making several changes over a period of two or three years, the new dehorner illustrated above seems to be nearly ideal.

No clipping of the hair or antiseptic is required, says Dr. Roberts in describing its use with calves two weeks to three months of age. "With one man straddling the neck of a calf and backing it into a corner and pulling the

Reprinted by permission from American Agriculturist
Ithaca, New York

muzzle and head from one side to the other, the operator, helping hold the head steady by grasping the ear toward him, can readily locate the horn buds and dehorn the calf.

"For calves under one month of age where no horn has developed, the horn bud may be gouged out together with its surrounding skin down to the skull with a quick upward or downward thrust of the dehorner.

"For older calves, the dehorner is placed over the small horn and given several circular twists. This cuts through the skin to the skull. The isolated horn with its corium is then gouged out by turning the dehorner sideways and pushing the cutting edge through the horn base."

Dr. Roberts says that rarely in older calves bleeding may be excessive and a pressure pack of gauze or cotton must be applied to the area and held manually for four to five minutes or held in place by a bandage wrapped completely around the head and throat region. In none of hundreds of calves dehorned by this method has any wound infection developed. However, he cautions that in screw worm areas proper precautions to prevent infestation should be taken during summer months.

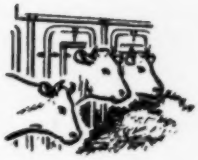
In approximately 400 calves dehorned in this manner in the past three years, only one has died as a result of the operation. Dr. Roberts says the cause of death was hemorrhage that could have been prevented if the owner had watched the calf more closely.

Veterinarians and others qualified to use the dehorners described in this article may obtain them by writing direct to Farmer's Digest, Box 404, Fort Atkinson, Wisconsin. We will refer your order to a livestock supply house. Dehorners are in ¾, ⅞, 1 and 1⅛ inch diameter sizes. Send $1.65 for one, $6.25 for the set.

Assuming an average number of pigs saved per litter of 6½, the 1953 spring pig crop is tentatively estimated at 48 million head, a decrease of 15 per cent from the 56.4 million head saved in the spring of 1952. This would be the smallest spring pig crop since 1938. The all-time record in spring pigs saved was 74.2 million head, reached in 1943.

Every dollar spent on lime and 0-10-20 for use on soybeans at recommended rates returned $4 above the cost of fertilizer, according to experiments conducted by the North Carolina Experiment Station.

20 Cow Herd Averages Over 600 Lbs. of Fat



Both his cows and his farm produce well for Don Morris

Condensed from The Ohio Farmer

Delmer E. Groves

A SINGLE cow with a record of 600 pounds of butterfat or more in one year is an object of pride in any herd. Many dairymen have never owned one! But in the herd of Donald V. Morris of Highland County, Ohio, this figure is barely average for the herd.

The Don-Mar Farm milking herd of over 20 purebred Holsteins averaged 639.1 pounds of butterfat this past year and 626 pounds the year previous. At the current rate of production, they may break both of these world records for the year ending in March. It's a very select list of Ohio herds that reaches the 500 pound average mark, let alone 600 pounds of butterfat.

Don didn't start out with this kind of a herd. The average production on 10 cows in 1943 was 397.7 pounds of butterfat. By 1949 it had climbed to 510.9 pounds and average herd size had increased to 19 cows. This was done by adding homebred heifers —thus many first and second calf heifer records are included in the average.

The production feats at Don-Mar Farm are accomplished under average farm conditions without pampering the cows. The cows are milked only twice daily but feed and management are top-notch.

This is no absentee rich owner's herd that made just under 640 pounds of butterfat and 16,224 pounds of milk per cow last year. Don is a dirt farmer; all but six animals now in the herd are homebred.

Yet, Don Morris is not just an average cow milker. Far from it! He has the knack—the feel—for getting the most milk from each cow. He has the farming know-how to get top production from his rolling 189 acre farm. This he couples with the ability

Reprinted by permission from The Ohio Farmer
Cleveland, Ohio

to see that feed is converted into milk in a most efficient manner.

Accurate production records are kept on every animal in the herd — only cows which prove capable of high production are kept. Ask Don the biggest factor in high production and he's likely to tell you it's the inherited ability to produce. But sharing equal honors with this trait is the utilization of high quality forage crops.

National production records are not broken by hungry cows. Knee deep in luxuriant pastures all summer long, the cows at Don-Mar still get both silage and hay in portable feed bunkers which are hauled from field to field as the pastures are rotated.

By eliminating seasonal pasture slumps and feeding pasture-fresh hay and silage the year around, good cows are able to demonstrate their actual production ability. Pasturing starts very early in the spring on Balbo rye. This is followed by pasturing small grains or heavily fertilized legumes. During the summer, mixed legume meadows are alternated with improved permanent pastures.

Balbo rye is used also for late fall pasture. This leaves only a short season when the cows must depend on stored forages. Don figures that pasturing is the best way to get early returns from the small grains without the expense of combine harvesting. It means an extremely high percentage of the farm's production is harvested direct by livestock. This saves labor.

Pasture rotation is practiced on a 60 acre field. It is divided into 10 acre plots by fences which cut it into pie shaped sections which corner at a set of swinging gates. In this way the herd can be turned into any one of the lots from a single entrance.

Mowing and frequent rotation keep the grass succulent, tender and fresh. The usual meadow mixture sown is about two-thirds alfalfa with some Ladino and Kenland clovers and timothy. Even though stuffed with pasture, the cows will eat some hay and silage every day of the year.

Around 30 acres of cropland are plowed each year. Half of this for field corn and the other half for sorgo grown as a silage crop. Since over 300 tons of silage are needed annually, a crop must be grown which will yield more silage than corn. Sorgo fills that need for Don.

In addition, he has found sorgo to be drouth resistant. Its high sugar content means it will keep better in the paper lined fence-wire silos in use at Don-Mar Farm.

Sorgo seems frost resistant, which permits late fall refilling. Thus the 12 by 36 foot permanent silo does double duty. It is filled

with grass silage in June which is fed out during the summer season. In the fall it is refilled with sorgo for winter feeding. The three temporary silos are also filled with sorgo.

Crammed so full of roughage, it's a wonder the cattle would have space left for grain. But they do eat grain. Don Morris' herd broke two world records in a row on a home mixed ration containing only 11 per cent crude protein. This low protein feeding would have been heresy only a few years ago.

The ration usually contains 2,000 pounds of corn and cob meal, 300 pounds of beet pulp and 300 pounds of a 32 per cent protein supplement. The same mixture is fed to milking cows, heifers and calves, with the amount varying according to condition and state of production. Some special feeds such as bran, oats and liquid molasses are fed to meet the individual needs and appetities of the animals.

Up to six or eight weeks of age, calves are fed whole milk from nipple buckets. By this time they have gradually switched to the basic grain ration plus oats and molasses. Older heifers do not receive grain but within a couple of months of freshening are allowed to run with the milking herd and receive grain in the milking barn.

Ordinary stanchions form the milking parlor but the cows are in them only long enough to eat grain and be machine milked (machine milking has been practiced since 1935). A loafing shed extends across an end and one side of the barn in an L-shape. There are box stalls for bulls and freshening cows. The herd always has access to an outside barn lot bedded with corncobs which are added to keep the cows out of the mud. It works.

The temporary silos are in this lot and silage can be thrown down into the bunkers without extra handling.

Earl Voeller and T. C. Ludwig, dairy researchers of the university and experiment station, have made a study of the Morris herd records. In their opinion, good feeding and management are only part of the story. Such a herd must have a solid foundation of good breeding. And good breeding means good sires.

More than one successful breeder of purebred stock can trace his success to the happy, though unsuspected, selection of an exceptional sire. Out of three sire selections, Don Morris has hit on two—this is not blind chance.

Each prospective sire is sampled while young before he is used on the entire herd. Half a dozen young bulls are being tested right now. Also some inbreeding is done to test family lines. This search is for outstanding families.

When found, their lines are intensified.

Sowiscol Don Echo has six daughters with mature equivalent records which range from 550 to 660 pounds of butterfat. Only two of these are less than the dams' records, which is a good score.

Sowiscol King Pride Mercedes has 14 daughters in production with records which range from 443 to 743 pounds of fat. They broke even with half producing more and half less than their dams.

A third bull, Don-Mar Seven, has nine daughters in the herd with records ranging from 536 to 824 pounds of butterfat. The majority of these are between 673 and 738 pounds of fat with none lower than their dams. This is the kind of bull every breeder is looking for—he's one in a thousand! "Seven" put 186.7 pounds of butterfat increase on nine daughters over their dams' record. It is doubtful if any other bull of any breed can equal this record.

After comparing the daughters of the three bulls, Voeller and Ludwig suggested that Morris breed to produce a herd sire that has a high concentration of Don-Mar Seven's pedigree on both sides.

Both the cows and the farm produce well for Don Morris. Each tends to uphold the other. With over 80 head of cattle on the 189 acre farm, there's enough barnyard manure produced to cover the corn and sorgo ground twice during each season. The meadows are also top-dressed with manure. Lime and commercial fertilizer are spread liberally over the entire farm.

Foreign Trade Affects Farm Prices

Foreign trade may be the most important factor in farm prices during the next few years, says Mervin G. Smith, Ohio State University.

He points out that foreign trade has declined since last year. This has increased the supply of agricultural products available for consumption at home. Further restriction of trade with other countries will weaken farm prices more, Smith says. Some people believe barriers to trade should be eliminated and reciprocal agreements extended.

"Hundreds of different groups, however, are asking for special protection of their industries," Smith points out. "This may mean a blocking of imports and the subsidizing of exports. There probably are enough of these groups to force us into a restrictionist policy."

— Ohio State University

Feeding Beef Cattle

PURDUE SUPPLEMENT "A"

Condensed from The Kentucky Farmer

Ray C. Hopper

University of Kentucky

WHAT is supplement A? Many farmers have heard of it and want to know.

It is the name given a mixture of proteins, minerals and vitamins. This mixture was originated by Drs. W. M. Beason, T. W. Perry and others at Purdue experiment station, Lafayette, Indiana. When it is fed in the right proportion, it is supposed to give the correct balance to coarse forages (such as silage, corn cobs, soybean straw, etc.) so beef cattle will make satisfactory gains with no additional feed.

Why feed corn cobs and other low grade roughages when grain is available? Dr. Beason explains it this way. Under present day feeding systems, hogs and poultry are more efficient users of grain than beef cattle. In other words, when grain is the only feed used, hogs and poultry can make more pounds of meat from a bushel than cattle. He points out that as population increases so will the competition for grain. It is conceivable that sometime the beef animal may be crowded off the grain market unless we find more effective ways of feeding it.

Since cattle can make satisfactory gains from materials that would otherwise go to waste on the farm, we should learn more efficient ways of using them. We know that straw, fodder, cobs, cotton seed hulls and the like, are all low in proteins, minerals and vitamins. For the last several years, Purdue has conducted experiments designed to find out which of these are needed and to what extent, to balance certain roughages. Supplement A is the name given the best mixture they have found to date.

(1) When supplement A is used both mineral and salt must be fed free-choice.

The mineral is made by mixing two parts bonemeal with one part salt; one ounce cobalt sulphate is added to each 100 pounds of salt in the mineral mix.

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Louisville, Kentucky

Purdue Supplement A:

	Per Steer Daily Lb.	1,000 Lb. Mix Lb.
Soybean oilmeal ..	2.25	643.1
Molasses feed (45% molasses)	1.00	285.8
Bonemeal	.18	51.4
Salt (1)	.06	17.2
Vitamin A and D Concentrate	.01	2.5
	3.50	1000.0

How good is it? In wintering 700 pound yearlings, where no other feed was used, 16.6 pounds of corn cobs and three and one-half pounds of supplement A, plus mineral and salt, made an average daily gain of one and a half pounds from November to April, at a feed cost of 16.9 cents per pound.

With another group of 800 pound steers, 55 pounds of excellent corn silage and three and a half pounds of supplement A, mineral and salt, made an average daily gain of 2.85 pounds per day at a feed cost of 17.65 cents per pound. These steers sold on Chicago market April 7, for

A Comparison of Hay and Grass Silage With and Without "Supplement A" for Wintering Steer Calves

December 7, 1951—April 11, 1952—126 Days

(Shorthorn Steers — Lynwood Farm)

	I Mixed Hay Supplem't A	II Grass Silage	III Grass Silage Supplem't A
Steers per lot	34	35	35
Av. initial weight, lb.	476	472	475
Av. final weight, lb.	627	605	723
Total gain per steer, lb.	151	133	248
Av. daily gain, lb.	1.20	1.05	1.97
AV. DAILY FEED			
Roughage, lb.	14.16	35.94	35.91
Supplement A, lb.....	3.50		3.50
Mineral mixture, lb.	.03	.13	.05
Salt, lb.	.05	.16	.12
FEED PER 100 LB. GAIN			
Roughage, lb.	1182	3409	1825
Supplement A, lb.	292		178
Feed cost per lb. gain*, cents	25.8	20.0	19.0

* Feed Costs—Hay $20 per ton, grass silage $11.33 per ton, supplement A $95 per ton, steamed bonemeal $5.40 per cwt., and salt $2 per cwt.

$35.50 per cwt., graded choice and dressed 61.6 per cent.

Corn from which the above silage was made would have yielded 70 bushels of corn per acre, worth $115. But when made into silage, it yielded 1,400 pounds of beef per acre after the cost of supplement A, minerals, etc., were deducted. Each acre of silage gave a net return of $341.45. The grain in 55 pounds of silage is about eight pounds, or the amount that each steer would receive per day. Multiply that by 146 days, steers in this lot received approximately 21 bushels of grain per steer for the entire feeding period.

Contrast this to the old way of

Comparison of Soybean Oil Meal and Linseed Oil Meal as a Source of Protein in "Cattle Supplement A"

November 4, 1951—April 2, 1952 (Progress Report not Completed)

Lot Ration	I Supplement A (with soybean meal) Corn silage	II Supplement B (with linseed meal) Corn silage
Steers per lot*	20	20
Av. initial weight, lb.	798	806
Av. final weight, lb.	1197	1187
Total gain per steer, lb.	399	381
Av. daily gain, lb.	2.85	2.72
AV. DAILY FEED		
Corn silage, lb.	55 (@ $12 per ton)	56
Supplement, lb.	3.50	3.50
Mineral mixture, lb.	.15	.14
Salt, lb.	.07	.06
FEED PER 100 LB. GAIN		
Corn silage, lb.	1926	2052
Supplement, lb.	123	129
Mineral mixture, lb.	5.4	5.3
Salt, lb.	2.4	2.2
Feed cost per lb. of grain, cents**	17.65	18.67
9 from each group sold for	.35½	.35½
Dressing percentage	61.6	61.6

* Some of these steers were treated with hormones.

** Feed Costs—Supplement A or B—$95 per ton, corn silage $12 per ton, bonemeal $5.65 per cwt., and salt $1.35 per cwt.
1,400 lbs. of beef per acre, including supplement A, deducting everything, $341.45 per acre.

Wintering Steers on Roughages

November 13, 1951—April 15, 1952—154 Days

Lot No.	Daily feed, lb.	Feed per lb.gain, lb.	Initial weight, lb.	Final weight, lb.	Gain per steer, lb.	Daily gain, lb.	Cost per lb. gain, cents
I Corn cobs	16.16	11.1					
Purdue Cattle Supp. A	3.50	2.3	720	951	231	1.50	16.9
II Pop corn cobs	13.13	13.9					
Purdue Cattle Supp. A	3.50	3.7	726	871	145	.94	25.0
III Cottonseed Hulls	23.06	19.5					
Purdue Cattle Supp. A	3.50	3.0	732	914	182	1.19	24.1
IV Corn cobs	17.15	12.5					
Supp. 2% fish solubles	3.50	2.5	724	935	211	1.37	18.9
V Corn cobs	16.05	13.9					
Supp. 20% protein from ammonia	3.50	3.0	733	911	178	1.16	19.0
VI Corn cobs	15.78	13.8					
Supp. 40% protein from ammonia	3.50	3.1	726	902	176	1.14	18.6
VII Grass silage	54.44	27.0					
Purdue Cattle Supp. A	3.57	1.7	735	1045	310	2.01	23.8

150 lbs. gr'nd corn plus 100 lbs. gr'nd cobs.

the entire feeding period. A normal steer on full ration would receive two per cent of his live weight a day, or 20 pounds. So, 20 pounds times 146 days, equals 52 bushels, the corn necessary to do the job.

When 476 pound steers were fed 36 pounds of grass silage and three and a half pounds supplement A, mineral and salt, they gained approximately two pounds per day.

Although growth rates, according to Purdue, have varied with the various roughages fed, calves and yearlings have made satisfactory gains on ground corn cobs, soybean straw, oat straw, corn silage or grass silage, when each roughage was supplemented with three and a half pounds per steer daily.

WIDE vs. NARROW CORN ROWS

Are we planting corn too close?

Here are some sound arguments against the practice

Condensed from Pennsylvania Farmer

SOME years ago corn rows were fairly standard, in the principal corn growing sections of Pennsylvania, at about 42 inches. More recently there seems to have been a strong tendency to pull them closer together. Now 36 inches, or even closer, is not unusual. Perhaps this is partly due to tractor farming, but so far as we can see there is no good reason for close rows with field corn, and several excellent arguments against them.

Suppose we had an 84 foot strip of corn; if the rows were 42 inches apart this would make 24 rows, or six rounds with a two-row cultivator. If the rows were pulled in to 36 inches there would be 28 rows, another round with the cultivator and 16 per cent more time consumed. If the rows were 48 inches, as they used to be in southern New Jersey, there would be only 21 rows, or one-third less than with 36 inch rows. This would be saving a third of one's time, not only in cultivating but also in planting and harvesting. If picking were to be done with a two-row outfit, one might get into trouble with too wide rows. There would also be a material reduction in the compaction of the soil by the tractor wheels in all operations.

According to a number of years of careful experimental work at the Ohio station the width of row, within reasonable limits, had practically no effect on yield provided the plants in the wide rows were enough closer to give the same number of plants per acre. On soils of low fertility (under 40 bushels per acre), the yield declined about a bushel per acre for every three or four inch increase in row width over 40 inches.

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Pittsburgh, Pennsylvania

However, on the soils capable of producing 70 bushels or more of shelled corn, there was no decline in yield up to 50 inch rows, and only a five bushel decrease in going from 50 to 60 inch rows. In one test reported where yields were 105 to 110 bushels per acre there was no reduction in going to the 60 inch rows. This work was done with a pretty thick stand where 15,680 kernels were dropped per acre. This would be about one every 10 inches in a 40-inch row. This, of course, was entirely too thick for the lower levels of fertility. How many plants were left by harvest time was not reported. Lodging has said to be no worse with the wider rows. It would seem that farmers with close rows were wasting a lot of time in all their corn growing operations with no compensating increase in yield.

One of the objects of the above experiment was to test the possibilities of making seedings of grasses and legumes in the corn at the last cultivation in July. This is the way most seeding down used to be done in the New England states. The report states that "results have been better in the wide rows, and in some years have been good. For best results the rows should be spaced 60 inches or wider and the fertility level high." Where one wanted a good ryegrass cover crop, fairly wide rows might be very helpful in getting it. Observations show that the heavy shade of very thick corn may suppress ryegrass, also that we get much better stands and more worth while growth where fertility is fairly high. For the same reason, if weeds between the rows were not well controlled, there might be more in the wide rows. However, it should not be too hard to keep the weeds down between the rows, and it is where the stand of corn is very thin that weeds really go to town.

Most corn planters can be set out to 48 inches if desired. When it comes to the tractor and the cultivator one may have to do a little individual figuring in order

EFFECTS ON FERTILITY

Fertility	50-bu. land	65-bu. land	80-bu. land	100-bu. land
Seeds per acre	8,000	10,000	12,000	14,000
36-inch rows .	21.8″ apart	17.4″ apart	14.4″ apart	12.4″ apart
42-inch rows .	18.6″ "	14.9″ "	12.3″ "	10.7″ "
48-inch rows .	16.3″ "	13.0″ "	10.8″ "	9.3″ "
Pounds Seed Needed Per Acre				
Medium flats .	6¼ lbs.	8 lbs.	9¼ lbs.	11 lbs.
Large flats ..	7¾ lbs.	9¾ lbs.	11½ lbs.	12½ lbs.

to do a good job. On most tricycle tractors width can be gained by turning the hind wheels inside out. Sweeps or spear point (diamond) shovels will cover more ground and do a better job than the old type straight shovels.

If one had a nearly square field which was almost level, so that the rows could run either way, is it better to have them north and south or east and west? We have never seen an experiment reported on this. Maximum exposure to sunlight has a lot to do with the manufacture of the starch which goes into the ear. One of the reasons the lower blades of very thick corn droop and die is on account of the shade. In wider rows we might be able to keep more of them alive and functioning longer.

If one widens the rows the stalks must be closer in the row to give the same plant population. The stand should depend on the natural fertility of the soil and how much manure, or high nitrogen fertilizer, one plows down and whether there was a good legume sod. Also on the susceptibility of the soil to drouth damage and whether the corn is to be picked with a machine or harvested by hand. The table at the bottom of the opposite page may give some ideas on this problem.

Experienced farmers know that when we get corn closer than a foot in the row it is pretty thick and needs not only good fertility but also plenty of rain in July and August. We are told that for machine picking and maximum yields the average ear should weigh, when dry, about a half pound; which is smaller than most of us like to husk. If we had 14,000 stalks per acre, and the average ear weighed a half pound when dry, we would have exactly 100 bushels of shelled corn. Mr. Oaks of Franklin County, Pennsylvania, who made 154 bushels to win the state contest last year, finished the season with 15,300 stalks per acre. This makes his average ear weight 0.7 of a pound. Some would say that if his corn had been thicker he would have had a higher yield.

Of course, 14,000 seeds don't give us 14,000 plants at the end of the summer. There are apt to be planter skips, especially if we drive too fast; too much high power fertilizer near the seed may burn; a poor seed bed or cold, wet weather after planting is bad, the worms and birds take their toll and some plants may be covered or knocked out in cultivating. Care and timely planting will reduce many of these losses but some are more or less inevitable. If crow repellent is used remember that an overdose can seriously hurt germination. Some figure on a 20 per cent loss, but with care and good luck it should not be over 10 per cent.

What about those who still check row corn? About all that can be said in favor of it is better control of pernicious weeds, such as quack grass, in the row. Experiments have usually given similar yields, where the plant population was the same, in hills or drilled. However, we have seen cases on drouthy soil, when dry weather set in early, where the drilled corn did much better. Row fertilization, which is by far the most profitable usage of a limited amount, is much more satisfactory with drilled corn and harvesting operations are generally easier.

Economist Says Farm Price Drop Is Over

The drop in farm prices probably is over, Mervin G. Smith, extension economist at Ohio State University, said today. "The price squeeze farmers have been experiencing in the last year is leveling off."

Farm prices have dropped only one per cent since January 1. Since August of 1952 they have declined 10 per cent.

"We do not expect sharp declines in farm prices or the rest of the economy as long as we maintain a sizeable defense program and employment remains high." During the next few months, farm prices probably will remain stable.

Smith said prices of individual commodities could fluctuate widely with supply. Weather could produce variation in market supplies of some commodities. Beef cattle prices may be weak but probably will not take another sharp drop unless wide-spread dry weather forces large marketings in a short period.

Smith pointed out that cattle growers will be marketing more during the next two or three years. They can not expect large price increases during this time.

Hog prices will remain about steady or could grow stronger during the next few months. In 1953, poultry and egg prices probably will be at least as favorable to producers as they were last year. "I can't be very optimistic about milk prices," Smith added. "I expect them to continue to show weakness for the next few months."

Although prices of some commodities have dropped in the past year, apples, oranges and vegetables have increased in price. Apples have gone up 18 per cent since August, oranges eight per cent and vegetables "have shown strength." — *Ohio State University*

U. S. Crop Predictions Come Under Fire

Reports serve a valuable function, but accuracy and methods need overhaul, farm and statistics groups say

Condensed from The Wall Street Journal

JUST how accurate are government crop reports?

This question, which means millions of dollars every year to farmers, banks, commodity exchanges and consumers, got a thorough going over at a joint meeting of the American Statistical Association and the American Farm Economic Association.

According to the professional statisticians, the agriculture department's forecasts, while they perform a valuable function, leave much to be desired as far as accuracy and the use of modern methods are concerned.

Dr. John D. Baker of Longstreet, Abbott Co., a St. Louis grain research firm, says that misfires in forecasting the winter wheat crop from 1922 to the present have averaged 100 million bushels a year at the time of the December forecast, 75 million in April and 25 million in August, when the crop is nearly all in. The crop as a whole averages out about 800 million bushels a year. The percentage errors have averaged 12.3 per cent, 9.4 per cent and 3.4 per cent at the respective forecasting dates.

Spring Fever

In predicting spring wheat, the agriculture department has been even more erratic, according to Dr. Baker. This is a smaller crop, averaging about 250 million bushels over the years, but the federal forecasters have averaged 25 per cent wrong on their first survey each March and have been just about as far off base in June. Even in September, the error averages 5.3 per cent. On a bushel basis, the usual error at the three dates has averaged 50 million, 45 million and 13 million bushels.

Dr. Baker said that wheat forecasters nearly always underestimate the size of the crop, "possibly because the reports are received from farmers, and farmers like high prices." The error averaged 5.4 per cent for December wheat

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Chicago 90, Illinois

outlooks in the 1940's and 14.7 per cent for the March forecast of spring wheat during the same years.

Lauren Soth of the Des Moines Register is equally critical about the government's efforts in spotting the size of the corn crop.

Not Enough Reports

"In July, August and September, the government issues a corn crop estimate once a month. That isn't enough for this crop during those critical months. The August estimate is released August 10 and for most close observers is out of date by that time. Then there is nothing more until September 10. I'd like to see the government use these new electronic computors we are always hearing about and get out a report every two weeks during the critical season, and within five days after they receive the information, not 10 days."

Mr. Soth said that apparently the federal crop experts just lump the figures they receive into a mass without using modern methods of evaluating and correcting them. "For the last several years, for example, the federal reports have consistently underestimated the effects of the cold, wet weather that occurred during the corn planting season."

The whole problem of crop reporting came to a head in 1951 when the agriculture department's crop and livestock reporting service issued a series of reports on the cotton crop which cost southern cotton farmers about 125 million dollars in subnormal prices.

Somewhat Overestimated

The original estimate put cotton acreage at 20,510,000 acres, 58 per cent bigger than the preceding year and 33 per cent ahead of the 10 year average. The first August 8 estimate of production was 17,266,000 bales. Final production turned out to be 15,130,000 bales and it was eventually discovered that the original acreage had been much overstated.

The outcry was so great that a congressional investigation was held this year, disclosing that among the government's local crop experts were professional wrestlers, haberdashers, automobile dealers and city and state payrollers not active in farming.

John J. Heimburger, who was counsel for the House Agricultural Committee which conducted the investigation, said recently that the agriculture department was spending about twice as much money on publicizing its various crop goals as it was in keeping the vital statistics on the crops themselves.

It Was a Place to Starve on

. . . but the lawyer reckoned without 4-H

Condensed from National 4-H News

PICTURE a downcast lad plodding home from school to his family's sorry farm to face the ruin and poverty which had come from growing nothing but cotton for generations.

As he aimlessly pursued his way, he kept recalling what the lawyer told his father when he completed the papers for the 150 acres of burned out, red and sandy crop land.

"I know of no better place in Hancock county," he said, "to starve to death than on the farm you have purchased."

What a future for a boy. His sensitive nature cried out as he realized what it meant for his parents, who deserved much better.

One ray of hope showed through the gloom. It had to do with something the boy had heard of called "diversified farming." He asked his mother what it meant, and she explained it as she had learned it from reading and in public discussions, making each point clear to the nine year old as if perhaps he might provide the answer to her hopes of finding a way out of their poverty.

Little did either dream what changes were to come on the farm in the years ahead, but in 1944, soon after that fateful talk, Eddie M. Folds at the age of 10 was enrolled in a 4-H club near Granite Hill in Hancock county, Georgia.

In his big green covered record book you will find his project book of that year with complete reports on 13 projects duly approved by county agent J. H. Shands. In each of the eight years following, the project reports are bigger and better, foreshadowing greater things to come.

Eddie mapped out two lines of action—with the help of his father, and county agent E. H. Jackson of Baldwin county, who had an interest in the farm. They were among the first co-operators in the Piedmont Soil Conservation District, and Mr. Jackson

Reprinted from National 4-H News
35 E. Van Buren St., Chicago, Illinois

wanted to demonstrate what he was "preaching" to his farmers.

First of the boy's two lines—which he has followed to this day —was to obtain badly needed cash. One was a garden which he ran beside his mother's profitable market plot. Sweet potatoes were one of his specialties, and over the years grossed him nearly $1,000 profit.

Livestock was another; he began with a Hereford calf and Jersey heifer his father and uncle gave him. Poultry was on the list, and he started 50 baby chicks. He cleared $80 on 11 Duroc pigs this first year and made it a regular project.

Alan B. Sibley, a South Carolina mill official, was so impressed with the boy's progress as he passed en route to his farm that he presented him with a choice registered Hampshire sow. She gave Eddie the thrill of his life with a litter of 10 lively babies.

Eddie's second line of action was starting modern grasses that would thrive in the summer, and the first year he put in an acre each of lespedeza for hay, crimson clover for building up the land and sericia lespedeza for grazing.

He also ran terrace lines and started filling in gullies when he had time. It was a good beginning.

The second year he seeded down more grasses, set out 100 kudzu crowns and terraced some small fields. Two new projects were setting out 1,000 pine seedlings and putting in some blue lupine—for its utility and beauty.

More grass went in the next year, and check dams were built to slow down the rainfall until the hard, impervious ground could soak it up. The next year he started testing fields for acidity, applying lime as required, and fertilizer on bare spots in his grazing areas and haylands. He took a fling at Bermuda, and found time to clear brush off some of his pasture.

Folks said Eddie had a magic touch. But it was brain work and elbow grease. Each new success, each w o r d of encouragement, drove him on. His morale was marvelous.

The boy's mastery of growing lush grass throughout the year was the talk of the region. The county agent and soil conservationist referred people to his projects. It was the same with other projects. He won top honors on livestock, and multiplied his animals.

Cotton was no longer king, although it was still a member of the team, for Eddie's cotton project was second place district winner in 1947.

His substitute crops and grasses had done so wonderfully that he was named county and state winner in field crops—and on top of

it all a trip to the National 4-H Club Congress in Chicago! His grazing project won $200 in the district contest.

But most of all Eddie had money and credit! One of his big cash crops was poultry, and in 1950 he sold 751 dozen eggs.

He plowed his profits back into the land in the form of fertilizer, fencing, reforesting and drainage.

Realizing that power is powerful, he bought five electric motors at a bankrupt sale. They power the milker, pump, run the ice cream freezer, tool grinder and any number of appliances.

He learned to service and repair electric fixtures and installations. He built 269 articles to serve some practical purpose, save labor or beautify some area. He went in for wild life protection.

Neighbors rubbed their eyes late one Saturday when they saw a field prepared for seeding where unharvested corn had stood early Friday. That was how Eddie worked. He had hired a saw mill crew after working hours on two days to pick the ears. Eddie's brother mowed down the stalks after the pickers, and Eddie followed with another tractor and harrowed the ground for blue lupine.

When the severe drouth struck last summer, the livestock was turned into an old kudzu field. It carried 17 animals for 28 days and saved overgrazing the regular pastures.

With the extra 65 acres of good native grasses which he fenced and cross-fenced, he got through the dry spell until the rains set in.

He had so much hay they had to build an "elevator" into the haymow. Now he has his own drouth relief!

Eddie's record book contains maps showing the farm's main features when bought, then six years later with many improvements, and again the 400 acres as of today with plots showing the different crops, grass lands and seven acre pond they dug.

And it is diversified! Even has bees — 31 colonies. The maps show the land "capability"—as to erosion, slope and soil type of each plot in color. The maps have been the basis of many talks by the club boy.

A prize memento is a letter in longhand from Rev. W. C. Corley of the Sparta First Baptist church which concludes: "He (Eddie) is an honest citizen who has gained the respect, admiration and love of all who know him."

W. F. Hall of Sparta, a member of the state soil conservation committee, wrote among other things: "It is a continued source of inspiration to note the enthusiasm and energy you are using in your conservation projects, as they are not only a source of money . . . but beauty."

Eddie closes the narrative in his record book—the book which gave him a trip to the recent National 4-H Club Congress in the national soil and water conservation awards program and a $300 college scholarship—with this:

"Because America gives me these things, I feel it is my duty to treasure these riches and guard them with a keen mind, a loyal heart, skillful hands and a healthy body, these being the basis of our 4-H pledge.

"I am glad I am a 'son of the soil.'"

New Mulch Corn Planter

A new "mulch planter," which makes corn planting possible without plowing, is under test at the University of Wisconsin. Soil specialists report top yields from a field planted with the new machine. Only one cultivation is needed in a season when the machine is used.

Corn cultivating on rolling fields of some Wisconsin farms has been a big conservation headache for years. Cultivator shovels leave small trenches that start run-off and erosion.

The scientists planted corn on an unplowed field of old legume sod. The field was heavily infested with quackgrass and had been disced twice. Eight hundred pounds 10-10-10 fertilizer per acre was placed nine inches deep, and 300 pounds 4-16-16 was drilled in the row. The corn was cultivated just once on June 30, with ordinary shoe type cultivator. The crop was side-dressed with 250 pounds ammonium nitrate per acre.

The field yielded 135 bushels corn per acre—practically the same as another part of the same field that had been tilled by conventional methods but received the same amount and kind of fertilizer as the unplowed part.

The mulch planter is a combination affair. An ordinary tractor planter is mounted in back of the tractor, but this arrangement has two sweeps on the tractor cultivator frame right behind the front wheels. These three foot sweeps cut four inches beneath the soil surface. Only a six inch strip of soil between the big sweeps is left unbroken.

A smaller sweep beneath each big sweep puts the fertilizer nine inches down. The planter unit is pulled behind the tractor, and plants the corn in a small trench left by the sweeps. Except for the prepared strips for the planter which are about a foot wide, the whole process leaves a mulch that helps save moisture.

University of Wisconsin

Don't Treat Trees as "Poor Relation"

Well-managed woodlots pay well . . .

Condensed from Wisconsin Agriculturist and Farmer

TREES are a crop on the Henry Titel farm in Sheboygan County, Wisconsin. So he farms them carefully. The "woods" is no longer treated as the poor relation among farm crops.

There are 24 acres of trees in the Titel woodlot. What to do with them was the question which came up a few years ago.

The district forester, Adrian DeVriend, was called on for help. From there on the story is one of smart woods management.

First, the woods, got a good inspection. How much timber was there? What kinds of trees and how old? How fast growing were they?

There was 224,000 board feet of standing timber. Some trees needed cutting at once. These were blazed so Titel would know which could be taken the first year.

A great many trees needed to be removed — 15,000 feet in all. There were culls which were old, diseased and damaged. There were "wolf trees" which took too much room. And "weed trees" which never would be much good.

But the good trees keep growing. This woodlot grows at the rate of 3,500 board feet per year. About $250 worth of timber for the taking each winter. And that can go on forever.

How different from woodlot where the saw is put to everything over a few inches across. Such logging means waste and less money to the owner.

"Selective cutting is the only way to go at a woods," points out De Vriend. "A man who slashes his timber just doesn't use good sense."

Harold Schluenes, another Wisconsin farmer, was offered $900 lump sum for the woods in 40 acres. He said, "No, I'll log it myself."

The district forester marked the trees for cutting. When it is all over, Harold will have much more than his $900. And he will still have 40 acres of young, fast growing trees.

Maybe you don't have time to cut your own timber. Wilbur Strube, Sheboygan County, had

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Racine, Wisconsin

14 acres of timber. He hired all the work done.

He sold $900 worth of logs. Cost to him was only $300. Best of all, there are still 14 acres of good timber.

You will be well paid for the spare time you spend in the woods. Research forests show that you can earn a wage of from $1.20 to $3 per hour for that winter spare time.

You, too, can get the help of a forester with woodlot problems. Most areas are already in a forester's district. Their service is free.

Egg Size Affects Early Chick Growth

Setting small eggs in incubators may result in losses to broiler producers, according to Dr. Morley A. Jull, head of the University of Maryland poultry department.

"It has been shown rather conclusively," Dr. Jull said, "that eggs weighing about 23 to 25 ounces per dozen usually hatch better than larger or smaller eggs."

Egg size and chick size at hatching time are closely related, he said.

Dr. Jull referred to several recent experiments that show the advantages of chicks hatched from the right size eggs. In one experiment chicks hatched from eggs weighing 25 ounces per dozen produced higher income than chicks hatched from smaller eggs. Another experiment showed that chicks hatched from large eggs required less feed per pound of grain than chicks from smaller eggs. In several tests there was lower mortality among chicks hatched from large eggs.

— University of Maryland

Are Your Cows Paying Their Way?

Cows in your herd giving less than 5,000 pounds of milk a year have a slim chance of bringing you a profit. And neither milk prices nor production costs will make much difference.

Last year cows averaging 5,000 pounds of milk ate $135 worth of feed and returned only $134 over feed costs report dairy specialists of the U. S. Department of Agriculture. Judging by the rule-of-thumb that the cost of feed is only half of the total cost of keeping a cow, those cows fell $1 short of paying their way.

Comparing similar figures for the depression years, the specialists find that cows averaging 5,000 pounds showed a net loss of $4 per year, while the 15,000 pound producer showed a net profit of $139.

— University of Vermont

Spooner Sheep Point the Way to Profit

Wisconsin Experiment Station flock is not fancy, but they get all phases of good management

Condensed from The Farmer

IN EARLY July, one healthy 50 pound lamb was deliberately infested with 40,000 stomach worms. That is about the number a lamb might be expected to pick up on contaminated pasture.

On the same day, research worker Robert Richard at the University of Wisconsin started taking blood from another healthy 50 pound lamb. He drew two ounces a day each day for five days, then four ounces a day each day for eight days, and then a little more than seven ounces a day each day for another 30 days. The total taken from the poor lamb was nearly two gallons in 43 days. That is much more than a human blood donor would be permitted to give in the same length of time.

As the worms sucked the blood from one lamb and Robert Richard took it from the other, he was keeping a constant check on the red blood pigment (hemoglobin) in the two animals. The decline was almost exactly the same. At the end of the experiment the worms actually had taken a little more blood as measured by hemoglobin disappearance from the one lamb than Robert Richard had taken from the other.

Carl Rydberg of the Wisconsin Spooner Branch Experiment Station told the story of Richard's experiment by way of illustrating how some flocks literally have the blood (and profits) sucked out of them. "You can't make money with sheep," he said, "unless you are a stickler for all phases of management — parasite control, good rations, and being constantly on the job at lambing time." Rydberg should know, for he has for several years had charge of the University of Wisconsin's Spooner station's famous grade flock.

The flock was started by buying run-of-mill western ewes several

Reprinted by permission from The Farmer
St. Paul, Minnesota

years ago. It has been upgraded through use of good Shropshire rams, careful ewe lamb selection, and good management, until now lamb crops average upwards of 125 per cent, the run of lambs average nearly 90 pounds at four and a half months, and labor return per ewe during the last six years has ranged from $16.54 to $37.22.

There is a record on every ewe. If she is a producer she stays. If not, she goes to market. Ewe No. 94, the records show, has not only been a great producer herself, but her ewe lambs have done well. In five years this ewe produced 12 sturdy lambs. Old No. 9 is another of the flock's fine ewes. She produced 13 lambs in seven years.

Although Shropshire rams have been used through all the years the station has had the flock, ewe weights average 20 to 25 pounds more than purebred Shropshire ewes would average. Most ewes four years old and older weigh upwards of 150 pounds, two year olds, in the range from 135 to a little more than 140 pounds.

Maternal instinct is another point on which ewe selection is based. In the spring you can see two year old ewes fighting other ewes away from their lambs.

What has made this flock profitable, and what makes it regarded in northwestern Wisconsin as a model farm flock, is a combination of all the practices that have gone, and continue to go, into its development. In addition to the breeding program, Rydberg lists other practices this way:

Control of internal parasites by drenching, phenothiazine in salt, and pasture rotation. Control of external parasites, dusting or dipping.

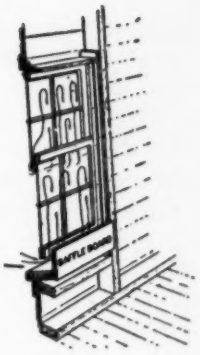
Roughage and pasture consisting of at least 50 per cent legumes, and grain feeding before and after lambing until turned on pasture.

Ewes individually penned when lambing. Heat lamps used when necessary. "I've carried several lambs through their first week by holding them up to the ewes to feed," says Mr. Rydberg. "Weak lambs are given a shot of penicillin G in peanut oil to ward off infection, plus vitamin C in capsule form." All lambs are creep fed early.

What makes the Spooner flock interesting to the man considering buying a small band of ewes or who already has some is that neither the Spooner breeding stock nor the management and feeding practices are beyond him. They are the kind that practically any farmer can copy.

Using preharvest sprays to speed up soybean maturity will reduce oil content, quality and yield, according to University of Illinois tests.

Give Your Chicks Plenty of FRESH AIR



Hardening off chicks and providing proper ventilation are necessary to obtain birds that can withstand the rigors of weather and diseases

Condensed from Everybodys Poultry Magazine

C. E. Lee

IT IS strange how many poultrymen there are who think it is all right to let the air in the brooder house get "so thick you could cut it with a knife." They would certainly not like to live in such an atmosphere themselves, and would insist on better ventilation in their own homes. Here's a typical letter from one of them from a section where people seem to be afraid of providing good ventilation and therefore get into all kinds of trouble with condensation of moisture, wet litter, coccidiosis, etc.

"On our broiler plant we have continual trouble, from midfall until late spring, with wet litter. The feed which gives us the best growth and feed efficiency also gives wetter litter. We haven't had any serious disease trouble on this medicated feed in spite of the wet litter, but do not like the condition and have had constant fear of an outbreak of coccidiosis or other disease due to this condition. The air seems rather bad, the chicks are somewhat drowsy, they do not eat as well and do not develop as they should. We do not overcrowd our chicks, usually running about one chick to three-fourths of a square foot or more of floor space. Signed CJN (Pennsylvania)."

We have seen a good deal of this condition on broiler plants, perhaps more so in southern Pennsylvania than anywhere else. Too many of the growers in your area seem afraid of fresh air. Some of the best New England

Reprinted by permission from Everybodys Poultry Magazine
Hanover, Pennsylvania

broiler producers would have the whole fronts of their houses open most of the time, after the first two or three weeks, during the day, under prevailing temperatures such as you have in the winter. I have seen house fronts open and birds eating and exercising happily in the litter in northern New England at temperatures down to 50 degrees below zero. In the midthirties, I think it was 1934, we had 42 degrees below zero at the Beacon Poultry Research Farm and we still had the ventilation systems working in all the houses.

Birds that are properly hardened off, gradually, to cool temperatures will not pile up and any broiler producer who says he can't give his birds proper ventilation without having them pile up is simply acknowledging that he is a poor manager. Anyone who knows how to breed good chicks appreciates the necessity of starting ventilation early, and increasing it gradually, hardening the chicks off as they grow until finally they can take any reasonable temperature. At the research farm we get chicks outdoors at 11 to 14 days of age, in yards, even though we have to shovel two or three feet of snow out of the yards and even though the temperature may be down around zero. At first, of course, we don't let them stay out very long but we get them out, on a day preferably when the sun is shining, and gradually force them to stay out longer by closing the door of the brooder house, until finally we are able to leave the chick doors open and let them run back and forth at will, the feed hoppers being kept outside except in stormy weather, and the electric heated water fountains being inside. Chicks are coming and going all day long, going out to get feed, going back to get water, perhaps a little heat under the brooder, and then outdoors to get more feed again.

That's the best way we know to raise healthy, hardy chicks and we put them out on the range in shelters at about eight weeks of age, the last of March, and frequently get a blizzard after they are out there and icicles may be hanging, a foot long or more, from the eaves of the shelters. Our experience has been that we develop far greater resistance to coccidiosis and other diseases by getting the chicks out early and hardening them off as rapidly as possible.

Of course, with broiler plants it may be necessary to rear the birds entirely in confinement, though we prefer to have some outside range if the climate permits use of it, as it does on the Delmarva peninsula, even in winter.

The condition which the letter notes in the eyes of the birds is undoubtedly what is called "am-

monia burn," a condition due to ammonia fumes from old litter. The older the litter and the less ventilation, the more trouble you are likely to have from ammonia burn and the greater your losses in profits due to loss or poor growth of birds.

Ventilation systems vary and different houses are equipped for different types of ventilation. Where the brooder house simply has ordinary double hung windows, much the same as used in a dwelling house, and is using coal stoves for brooding, good ventilation is not at all difficult. Windows should first be raised about an inch from the bottom sill and this can gradually be increased, after the guards around the stoves are taken away, until you have opened the windows a distance of about six inches. Then you may begin to drop the upper sash just a little. Up to the time you drop the upper sash the only out-takes you have are through the brooder stove pipes and chimneys. This will not be enough after the chicks are three weeks of age or so, depending somewhat on the weather, and opening the top sash by dropping it an inch or so at first, will give extra circulation. Until you open the top sash the flow of air through the bottom sash will be very moderate and should not cause any undue draft on the chicks. As the chicks grow and can stand more air the circulation will be increased by adjusting the upper sash which will then act as a second out-take, in addition to the brooder stoves themselves.

With gas brooders or with electric brooders or hot water brooding systems, or infra-red lamps, ventilation is perhaps a little more complicated. It is, of course, particularly necessary to provide plenty of ventilation for gas brooders and the distributors, as well as the manufacturers, of gas brooders have usually emphasized this point in discussing brooder operation with poultrymen who purchase their brooders. With gas brooders we use a little top opening of the window, along with the bottom opening, right from the start. Houses equipped with regular ventilating systems, fan or gravity, can be adjusted to provide the proper flow of air, if they have sufficient capacity in the first place.

Ventilate your house properly and get rid of wet litter and ammonia burn, as successful growers have done in many areas. Why penalize yourself when fresh air is free?

A University of Illinois veterinarian says dusting a five per cent sodium fluoride powder on chickens will control lice.

They Gave the LEASE a HUMAN Side . . .

New approach to the farm lease aims toward greatest long-time profit from the farm

Condensed from Successful Farming

James J. Wallace as told to Francis A. Kutish

LEASING a farm involves more than just signing a legal document. The real job of a farm lease is to *provide the framework for operating the farm at its top profit over a long period of time.*

A new approach to the farm lease has been tried in renting the Iowa State College Agricultural Foundation farms. This approach puts the real function of the lease foremost, *along with the human side of landlord-tenant relations.* It has proved so successful that it is offered as an aid in solving your leasing problems—whether you're a landlord or a tenant.

Of course, the immediate purpose of the lease is to divide expenses and income fairly between landlord and tenant. But sometimes we overlook the *real* function of the lease.

Generally speaking, leasing terms are dictated by custom in the community where you are located. You can't get very far away from this—*except on a give-and-take business arrangement.* but this *give-and-take* is one of the most important factors in keeping both tenant and landlord happy.

Here's an example. Recently a tenant on one of the specialized dairy farms owned by the Iowa State College Agricultural Foundation moved to a farm he had just bought. There were nine new prospective tenants for the farm.

Some of the nine prospects had dairy cows to add to the farm herd. Others were just getting started in farming—they had no cows and didn't want to invest money in high priced cows at that time. After the prospects with no cows had looked over the farm, each one was asked what share of the dairy income he was willing to give up in return for the landlord's carrying the total investment in the cattle herd.

After careful thought, each of-

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Des Moines, Iowa

fered to accept only 40 per cent of the monthly milk checks instead of the customary 50 per cent. One of these men was selected to rent the farm. His terms of 60 per cent and 40 per cent split in the milk check and 50-50 on the rest of the farm income were accepted. Everyone is happy.

Another problem that often bothers both landlords and tenants is how to get improvements made on farms and who should pay for them. Here's how the Iowa State College Agricultural Foundation handles this one. One tenant recently asked for running water and a shower bath in the house. Estimates indicated the cost, figuring some labor help on the part of the tenant.

The foundation farm manager made a list of other farm improvements needed which the tenant could do. These included new terraces to be built, ditches to be filled, and grassed waterways to be established. The tenant was asked how much of that work he was willing to do in order to get his home improvement. After talking it over, they got together — and the program was carried out to the astisfaction of both parties.

The result—the home is a nicer place for the tenant family, the land is more productive, and more erosion is being controlled. In short, the farm increased in real value. The tenant used his spare time to the advantage of both himself and the landlord. Cash costs were kept low. And the whole thing was charged off that year without a complicated carry-over of obligations by one party to another. And best of all, it left *both* parties satisfied and happy.

The Iowa State College Agricultural Foundation farms all are rented on a livestock-share lease. The problem is a little different on farms rented on a crop-share-cash lease. Even in that case, managers of most farms like to charge off the whole cost of improvement in one year rather than to depreciate it over a period of years.

Special cash rents for new improvements and paying the tenant for unused improvement value become complicated and may cause wrangling. A special cash rent loses its identity when a change in tenants is made. A prospective tenant is inclined to look at the total amount of cash rent in one sum being charged for the farm and compare it with other available opportunities.

A good lease, the right terms, and a good tenant and landlord still won't insure that a rented farm will be operated at its long-time top profit. The production decisions on that farm must be planned with the long-time view in mind. This means that the tenant needs some assurance that

he can stay on the farm for a period of time.

This doesn't necessarily mean long-term leases. The leases in use on foundation farms run for a period of years. But every lease has a clause which gives *either party* the right to cancel the lease in *any* year by serving notice to the other party before September 1. This practically makes it a one year lease.

Despite that, foundation farm tenants say they feel a reasonable security of tenure. Why? Because the tenants and farm manager have built up a working relationship so each tenant knows he can stay on his farm *as long as he is doing a good job of farming*. This *working relationship* is important.

Unconditional long-term leases actually have invited some tenants to do a poor job of farming—because they can't be put off the place. It's a well known fact that the tenant receives much more protection from a long lease than does the landlord. It is not practical to attempt to keep a tenant on a farm against his will. So in practice the landlord doesn't get nearly as much security out of a long-term lease as does the tenant.

What's a landlord to do? Take plenty of time to find the right tenant for the farm. Then give him the *co-operation* and *encouragement* he needs to do his best.

The most successful farms in the foundation group are ones that have happy tenant families living on them—families who take pride in their home and their work. Profitable farming calls for a lot of human resourcefulness in the man who does the work.

He needs mental alertness and imagination in dealing with ever changing problems. To do his best work he must have a spark of enthusiasm, a clear picture of where his program is going, and what it will do for him and his family. The wise landlord will find ways to encourage this vital spark. There is much he can do.

What's a tenant to do? The answer is clear—the best job of farming he knows how to do—and that *every day*. If his landlord is not smart enough to give him a square deal, there usually is another around the corner with a better farm who *is* wise enough to recognize a good thing when he sees it.

Both landlord and tenant need good training in the principles of farm management to make good decisions. They need to know the kind of cropping program which will give the largest output from the land over a period of time. They need to know the kind of livestock program and management practices necessary.

If they both understand these problems, they reduce the possibility of bickering over details.

Clams Go to College

A Rutgers University research team experiments with clam farming

Condensed from Report from Rutgers

SIX years ago, a Rutgers University research team began an unusual assignment. It was just this — find out how to establish and systematically operate a "clam farm."

That job was as hard as it was odd. It was as if the task were to learn how to start a dairy farm—but without any human being ever having found out what cows eat, how fast they grow, or even what young calves look like.

Although studies of the hard clam — or quahog — had been made as long as 40 years ago, whole great areas of the life and habits of the animals were blank. The best marine biologists in the world could not agree on what its larva—the infant clam—looked like. The question of its food supply had scarcely been touched. The conditions under which it lives and grows most thriftily, even the annual rate of growth, were not firmly established.

The animal whose existence prompted this intensive investigation bears the name *Venus mercenaria* and is commonly called the quahog (or quohog, depending upon geography). Appropriately named from the old Anglo-Saxon "clamm" for clamp, the quahog is a retiring little inhabitant of bottoms of tidal bays and rivers, later appearing on *de luxe* menus as the cherrystone or little neck. Older and tougher, it provides the tangy flavor for chowders and stews.

The research work held interesting potential for the state's economy since Jersey clammers annually account for a full fifth of the 20-million-pound, six-million-dollar Atlantic coast crop, more than any state except New York.

Rutgers was a logical place to look for answers, since marine biologists at the university had for half a century conducted studies on other mollusks, notably the oyster, and had maintained observation of the whole community of marine animals in Jersey coastal waters.

Dr. Thurlow C. Nelson, one of the world's authorities on shellfish, had two able associates, Dr. Melbourne R. Carriker and Dr. Harold H. Haskin, working with

Reprinted from Report from Rutgers
New Brunswick, New Jersey

him in the studies. At their disposal was the university's sturdy 40 year old combination floating laboratory and houseboat "Cynthia," a small powerboat, the vast accumulated background and know-how of marine research—and several hundred square miles of salt water in which to work.

Water temperature, salinity, tidefall and tidal currents, air temperature, moon phases, barometric pressures, rainfall — all these basic facts had to be gathered, charted and studied for their influence on the life and well being of the clam.

The big blank in the quahog's life story came in its microscopic first days of life. Resembling several related mollusks closely, the identification of the larval stages was far from certain when the studies began. The direct but difficult way to make identification certain was to breed artificially and then rear young clams through the stages when size is measured in microns, the one-thousandth of a millimeter. A milimeter in turn is thirty-nine-thousandths of one inch.

Dr. Carriker and Dr. Haskin did just that, painstakingly learning a whole set of entirely new techniques for raising clam larvae artificially. More than a million clams were reared in the field laboratories during the fifth year.

Propagating clams artificially was a painstaking task. Having bred them, the problem then rose of suitable food for these infinitesmally tiny "babies." Earlier workers had developed a "diet" made by fertilizing salt water with ordinary commercial fertilizer, then inoculating it with microscopic plants and bacteria. The plants, properly known as phyto-plankton, and bacteria thrived (and the odors rose to high heaven) providing a liquid tremendously rich in the minute organisms which serve as food for the clam larvae as they do for other tiny marine animals. Once this "diet" had been adjusted by heavier fertilizing, the clams were kept healthy and well fed through the balance of the summer's experiments.

This made possible another accomplishment—the incredibly exacting task of raising single clam larvae in individual micro-dishes, each equipped with circulating aerated Bay water. This in turn permitted the scientist to observe the swimming and crawling stages of the youngsters, their ingenious method of attachment with filament-like threads that are paid out like a hawser as the clam crawls along the bottom during its very early infancy. Observation of individual clams also provided the first knowledge of the type of bottom the larvae prefer, and the continuous watching of individuals also made it possible to learn the successive stages of

the larval cycle accurately.

Meanwhile, Dr. Haskin's "farms" were providing additional information. He conducted studies on six experimental "plantings" of clams, attempting to learn the speed of growth, the factors affecting growth, and methods of protecting young clams from their many natural enemies.

Dr. Nelson himself, in addition to quarterbacking the research team, was conducting experiments at Cape May with the actual raising of young clams in captivity, measuring their growth and testing cages, coops and containers of various sorts to protect the baby clams from their enemies.

The growth of the captive young clams was astonishing. Between June 25 and September 3, in one series of studies, the weight of the clams multiplied 11 times.

Step by step the information was accumulated, not in a startling burst of discovery, movie style, but with the dogged patience of a miser collecting coins.

The basic question was answered; yes, a clam farm could be established, using the methods developed by Rutgers researchers. But economically, clam farming using artificially spawned and protected clam seed would be a red ink operation; too costly in terms of facilities and skilled labor needed to rear the infants, too many answers yet to be found in the area of food supply, and lastly, too many natural enemies against which defenses have not yet been perfected.

A better investment, the research indicated, would be systematic attempts to provide protected breeding places for the clam, and to control the natural enemies.

Ben's Ewes Pay $2 for $1

What about sheep as a money-maker on your farm?

Ben Seely, winner of the Michigan State College Farmers' Week champion flockmaster award four out of the past five years, says, "Dollar for dollar invested, hour for hour of work required, sheep are the best money maker for me."

He added that in 1950 his ewes produced $2 for every $1 he had invested and at the end of the season he had his old ewes left. His 42 ewes raised 69 lambs to give him 127 pounds of lamb per ewe in less than five months time during the past summer. He selects ewes from dams that have a history of "twinning" and uses purebred bucks for breeding.

Special Purpose Legumes for the Great Plains

Large scale tests of hundreds of legumes may find many for special purposes

Condensed from Nebraska Farmer

Homer Fine

AN EXTENSIVE screening test to find better adapted legumes for Nebraska and Great Plains conditions is under way at the University of Nebraska's North Platte experiment farm.

A nursery of 230 different legumes was started with seed from all over the world by horticulturist Glenn Viehmeyer and agronomist Robert Ramig. Promising legumes will be taken from the screening nursery and put on tests for adaption, hardiness, yield, forage production and utilization, soil improvement and general cultural characteristics.

The nursery will also serve as an observation plot, where farmers and ranchers can see the legumes growing and where new plants can be compared to known varieties.

About 75 legumes were grown in the nursery in 1951 and the figure was boosted to 230 this year. The legumes come from places such as Nebraska, Iowa, Wyoming, Kansas, South Dakota, South Africa, Turkey, India, Europe, Pakistan, Argentina, Uruguay, New Zealand, Denmark, Germany, Belgium and England.

A clearer picture of what is being done can be gained by looking at only one small segment of the legume tribe. Take the alfalfas, for instance:

Although a few of the better known alfalfas constitute a large part of the major legumes, others are included in the minor or special purpose legume branch, which includes all legumes not grown over extensive acreages. In all, some 40 different alfalfas are included in the screening nursery out of the 7,000 named species that are world-wide in distribution.

So far, of the 479 genera making up the 7,000 species of alfalfa, 14 genera have plants used as

Reprinted by permission from Nebraska Farmer
Lincoln, Nebraska

forage crops. Fifteen genera have plants used as human food and 18 are used as medicines. Other uses of some of the 150 genera being used today out of the 479 include timber, jewelry, basketwork, spinning, oils, snuff and perfumes.

Many more of the alfalfas could be utilized by man, and it is in such screening nurseries as the one at North Platte that some of those uses are found.

It is a generally known fact that some of the true clovers, such as red and alsike clover, grow well on a water table from 6 to 30 inches. Researchers would like to find legumes that will go right on up the water table.

The primary aim of the North Platte nursery project is to find better legumes that can be established in native, sub-irrigated meadows of the Great Plains; legumes for combination with native and exotic grasses in upland and irrigated pastures; and legumes for forage production and soil improvement on dryland farms. Still other legumes are needed that will maintain on alkali soils, and for reclamation of abandoned agricultural lands.

Viehmeyer believes the need for a thorough investigation of the potentialities and culture of special purpose legumes is one of the most important problems facing the farmer and rancher of the Great Plains. Funds are limited, however, and trained investigators are almost nonexistent. Viehmeyer and Ramig have started the pioneering effort with their legume nursery at North Platte, and hope to assemble and test additional varieties each season.

Part of the test material will be collected by farmers, ranchers and county agents as seed — from Great Plains native legumes and grasses—and grown at the nursery for preliminary screening and testing. Other seed will come from USDA plant explorers. Viehmeyer and Ramig plan to increase more promising varieties for wider trial and studies of production and utilization.

They reason that plants do exist that are needed in a progressive program of soil conservation and land reclamation. The problem now is to assemble the largest possible number of varieties and strains for evaluation under the soil and climatic conditions of the region.

Vigorous growth and good adaption to the Great Plains area are already apparent in many of the varieties in the nursery. Only a few have failed completely.

The *Lathyrus* genera—vetches and peas — and some of the clovers (*Trifolium*) have made the best showing so far. *Lathyrus* varieties came from Nebraska, Wyoming, Iowa, Turkey, India and Pakistan. The *Trifoliums,* such as red, white, alsike and Persian clo-

ver, came from India, New Zealand, South Africa, Germany, Denmark, Belgium and Iowa. One Indian variety is a free-flowering, drouth tolerant species of exceptionally matted growth habit. Another was taken from a steep mountainside 3,900 feet above sea level in Turkey.

A goat pasture in Turkey contributed a strain of true rhizomatous alfalfa, *Medicago sp.,* that has possible value as pasture and breeding material. The species crosses readily with common alfalfa, and transmits the rhizomatous habit to some progeny.

Tall wheatgrass, *Agropgron elongatum,* was selected in the fall of 1950 from the worst alkali spots at North Platte and clonal strains were transferred to the nursery. Selection was made from the material and used as a basis for a new strain.

Birdsfoot trefoil, *Lotus corniculatus,* was collected in Argentina, where it is the most promising forage plant, producing a dense growth 16 inches tall on dry, sandy soil. Big trefoil, *L. uliginosis,* was New Zealand's contribution. Uruguay furnished one lot of Birdsfoot trefoil, while several lots of unknown origin are being screened at the nursery along with legumes from the United States and other countries.

One particularly interesting individual in the North Platte nursery is a new genus and species of grass, *Stiporizopis,* which is a hybrid of promising value on the more sandy soils. The cross which has tremendous seedling vigor, growing 15 to 18 inches high in 60 days, was made by George Rogler at Mandan, South Dakota. *Stiporizopis* is a hybrid of green needlegrass and Indian ricegrass.

Horticulturist Viehmeyer points out that if these special purpose plants are to be used in Great Plains agriculture as they should be, their introduction and development will depend largely on the efforts of the county agent, farmer and rancher co-operating with the experimental farm.

Losses From Farm Fires

Fires in the United States cause the death of 8,000 people a year and the loss of more than one million dollars daily. This is a huge waste of life and property. A farm fire seldom attracts attention outside the locality in which it occurs because it is a single fire and does not reach the conflagration state. However, it is estimated that fires on farms take approximately 3,500 lives and destroy more than 100 million dollars annually or enough to build 50,000 barns of $2,000 each, which if stood end to end would form a wall 500 miles in length.

Do You Have Plenty of Water?

It's Getting to Be a Problem in Many Areas

Condensed from Kansas Farmer

James Senter Brazelton

MANY people believed Malthus was wrong when 150 years ago he said that sooner or later the world's population would outstrip its available food supply. But today, thousands of people live their span of life and never for a single day have enough to eat.

The human race is increasing so rapidly that by 1955 there will be 10 million more people in the United States alone than there are today. Yet, no more arable lands are available for exploitation. We must now depend upon farm lands we have. And most of them have been badly abused.

What Malthus did not foresee was that water would be the limiting factor in food production. Living in the moist climate of England it never occurred to him lack of water could affect the world's food supply. But exhaustion of water resources has turned many once thriving areas into unproductive deserts. We go blithely about our business, complacent in the thought this condition could not happen here! Sadly, it is happening here.

The frightening threat of water shortage is growing almost everywhere in America. The problem is most acute in the west and southwest. Increasing demands of rapidly growing communities and industries are exceeding the supplies of water on which they depend. The people of New York city had this fact dramatically brought home to them not long ago when the Croton and Catskill reservoirs became exhausted. Eastern cities are unable to cope with industrial demands for more water and when they do meet these demands it is always done at the expense of agriculture.

According to the Doane Agricultural Digest, in the central part of Illinois moisture is ample for crops, but about half the farms are short of water for livestock. This condition is typical of communities in all parts of the midwest. Due to a decrease in water-absorbing ability of our soils, wells, springs and other sources of

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Topeka, Kansas

supply are being exhausted. Farm ponds are drying up. Isadore Ritter, Blair, Kansas, is kept busy hauling water to farmers and townspeople in Doniphan county where the annual precipitation is 33 inches. His truck is equipped with a 1,000 gallon tank. He hauls from 9 to 11 loads daily, filling cisterns not only for livestock but for household use as well.

Scarcity of water is becoming an ever increasing problem in a great many communities throughout the world. In certain parts of Old Mexico women make a 10 mile round trip every day carrying a five gallon tin, balanced on their heads, filled with precious water for the day's cooking.

Scientists tell us plants use about 300 pounds of water to produce one pound of dry matter. Regardless of how much plant food the soil contains, plants can't use it without water. We are told it takes more than one barrel of water to grow one stalk and ear of corn. Knowing these things things helps us realize how absolutely dependent we farmers are upon a plentiful supply of water.

Growth of cities and industries depends upon water development and in this they offer serious competition to agriculture. It takes 600 to 1,000 tons of water for each ton of coal burned in a steam generating plant. Production of a ton of steel calls for use of 65,000 gallons of water, and a ton of rubber about 85,000 gallons. A large paper mill will use 50 million gallons of water a day, enough to supply a city of 500,000 people.

In the west, water and water alone is the key to the future. In this area, agriculture is often impossible without irrigation. To meet this need, the Federal Bureau of Reclamation has set up an immense conservation program. Already one and a half billion dollars of taxpayers' money has gone into building great dams and reservoirs. To date, these gigantic engineering projects have not come up to expectations in solving the problem. In fact, the problem is aggravated by them, for an abundance of water encourages new concentrations of population which, sooner or later, put an end to the abundance.

Although these projects may solve the immediate water problem in some areas they have no very great future. For, according to studies made by the Soil Conservation Service, it is revealed about 64 per cent of all reservoirs in the United States have useful lives of less than 100 years. It has been predicted by the American Society of Civil Engineers that the Elephant Butte reservoir would be effective only 158 years. There are existing records which show some reservoirs have silted full in less than 30 years.

The Soil Conservation program

conserves water on and in the land by slowing down the run-off with terraces and grassed waterways. Commonest erosion control method now in use is contour plowing, the contours acting as miniature dams, holding water back long enough for it to soak into the soil, reducing its velocity and its erosive power. One major contribution of the Soil Conservation Service is one that may have a profound effect on human civilization for centuries to come. It is classification of land according to the uses it is capable of sustaining.

All these devices are planned so we might make profitable use of water and not let any of it go to waste. For the amount of water we have is limited. Even the modern, scientific rainmakers, apparently cannot make more. All they do is to bring about conditions whereby the already existing water vapor is condensed into drops and they fall as rain.

As the population of the world increases, more and more water must necessarily be used to grow more plants to satisfy the insatiable demand for food. But, fortunately, when water is used, it is not destroyed. It can be used over and over. The heat of the sun draws water vapor from the earth to clouds which, sooner or later, condense and water falls back to earth as rain.

Turkey Artificial Insemination Coming

Artificial insemination of turkey breeding hens is coming in the not too far distant future.

That's the word from Howard Wiegers, poultry researcher at the University of Nebraska. He says insemination will not be a common thing until some of the techniques have been perfected, but he foresees the day when flock owners may have artificial breeding organizations similar to that of dairymen.

Research now is underway at the University of Nebraska to find a suitable media with which to dilute and store turkey semen. If such a diluter can be found, semen from one tom might breed many more hens than now.

The media used for storing and diluting dairy bull semen does not work for turkey semen, according to the poultry researcher.

Researchers also are trying to find out whether a physical measure can be used to indicate the fertilizing potential of semen. The practical application of such information would be the removal of impotent males from the breeding flock—a matter of considerable economic importance to the poultryman. — *University of Nebraska*

Lime Is a Plant Food —

Not Merely a Treatment for Acidity

Condensed from Missouri Ruralist

Dr. William A. Albrecht

Chairman, Department of Soils,

University of Missouri

FOR bountiful production in agriculture we must always work with, not against, the laws of nature. The sciences are doing much to help in our understanding of nature's ways in the growth of our crops, our livestock and ourselves. But this knowledge still is not complete enough to keep us free from occasional but significant errors.

Such errors most often come about when we try to move too quickly with programs designed to change the habits and thinking of large groups. If we allow time for individuals of the groups to learn and understand basic principles, such errors are not too likely to occur. Campaigns dealing with farm production changes may suffer from lack of sufficient understanding at the outset of basic natural forces.

The campaign for liming the soil based on the slogan, "Fight Soil Acidity" is an illustration. We have added to our understanding of how the soil serves to nourish the plant via its roots. Thus, we ought to be rethinking the wisdom of the idea of fighting soil acidity to the point of getting rid of it—of making the soil "neutral."

Serious disturbances, even disasters, in crop production, followed by irregularities in animal feeds on those crops grown on "neutralized" soils, indicate that fighting soil acidity with carbonate of lime in limestone is not in accordance with natural facts of plant creation.

The cry, "Lime the Soil for Legumes," was well received by the public, followed by such slogans as "Grow Legumes to Build Up the Soil." Both of these farm slogans now are being reconsidered for the serious errors delaying activities for b e t t e r food

Reprinted by permission from the Missouri Ruralist
Topeka, Kansas

production. Soil exploitation rather than soil restoration was increased.

While legumes have the ability to fix nitrogen (they can take nitrogen from the free supply in the air as well as the limited supply in the soil) we find they do not necessarily carry out this philanthropic service to the soil. They are not always using atmospheric nitrogen merely because they are growing.

There have been no measurements of nitrogen fixation by legumes growing in the field that are accurate enough to tell us just how much nitrogen is taken from the air by a legume crop. Also, even if a legume takes nitrogen from the air to make plant growth, that nitrogen is made a part of the plant tissue, more in the tops than in the roots. This nitrogen is not made a part of the soil to any extent unless the entire crop is sacrificed on the spot and plowed under.

We are now learning that acidity of the soil is not to be blamed when legumes fail to grow on those soils that have become highly acid from the forces of nature. Soils where the rainfall is high, particularly where virgin forests once grew but have been cleared, fail to grow these protein producing, nitrogen fixing legumes because these crops do not find enough fertility.

The missing soil nutrients were lost because acidity, or hydrogen, came in to replace them. Decaying or "souring" forest litter made much acid for that effect. The growing trees were setting free acidity or hydrogen from their roots to trade for fertility not lost by leaching rainfall. These soils were growing only wood when the pioneers took them over. Shall we expect legumes planted there to make much more than woody tissue even if they grow there?

Plants grow because they can put acid out of their roots through respiration. Plant growth is possible because plants trade that acidity to the soil and take fertility in exchange. If there is acidity present along with plenty of fertility in the soil, then plants grow better than if that fertility is not accompanied by any acidity.

We now are coming to see that had we known more about how plants feed with their roots in the soil, there would have been no "war" on soil acidity. Instead, each of us would have undertaken our separate responsibilities to rebuild our soil first with calcium supplied with limestone. That work might well have started 25 years earlier.

Perhaps we would have limed to supply magnesium, too. Had we looked upon increasing soil acidity as nothing more than decreasing soil fertility, we could have believed our soils are declining in supplies of all nutrients,

including the trace minerals now so disturbing as to their possible needs.

Only as our understanding of the natural behaviors and natural laws of nature increases, will we farm more effectively on the soil that provides the creative potential for farming. For creation of farm products we need to supply the soil with the fertility for which plants trade their acidity.

Manure After Planting

DON'T worry if you don't get the manure hauled onto this year's cornland before you plow. Tests in Ohio show you may get as much corn by putting on the manure *after* planting. More important, if you're on rolling land, you can save tons of topsoil through the summer.

In experiments beginning in 1945, on land with 12 per cent slope at Zanesville, Ohio, H. L. Borst of the United States Soil Conservation Service began top-dressing plowed soil with barnyard manure. The mulch cut down erosion to a great extent, by breaking the force of raindrops.

More recently, the experiment has been continued on gentler slopes at Wooster, Ohio. Some plots received 8 to 10 tons of manure plowed down, while other plots received the manure as a mulch. Borst found that using manure as a mulch reduced run-off by one-half. Erosion from mulched plots dropped to around a half ton of topsoil per acre; erosion from unmulched plots was *20 times* this great!

Besides holding good topsoil in place, this practice results in yields just as high as if the manure were applied before plowing. And in drouthy periods, it may produce more corn per acre.

Average yield for all plots was over 100 bushels per acre for the seven year period. But in both the dry summers of 1951 and 1952, corn grown on the manure mulched plots yielded 11 bushels more corn per acre than the corn receiving normal care.

Borst found two problems in mulching with manure. One is weed control; the other is method of application. He tried several systems.

The management that worked best was pre-emergence treatment of corn with 2,4-D, spreading of the manure with a regular spreader soon after planting and one cultivation at lay-by time.

Another system that worked well was to cultivate as usual and apply the manure after the last cultivation. This method, though, doesn't protect the soil from erosion in early summer, when rains are most intense.

— Delmer Groves, in Successful Farming

How Bob Smith Makes Beef

He says you can pay several cents a pound more for good feeder calves than they sell for when fat . . . and still make money

Condensed from The Cattleman

Frank Reeves

BOB SMITH of Letts, Iowa, does not claim to know all the answers to cattle feeding problems, but he does modestly admit he has learned some things during the 27 years he has been feeding cattle.

Cattle feeding on the whole has been good to Smith. He farmed rented land for several years, but he now has two Iowa farms. He paid his last land note last year. No one ever gave him any land or money. Cattle feeding earned the money to pay for his land.

Smith paid high prices for his feeders when he purchased them in 1951, and a lot of other feeders did the same thing. Unlike many 1952 cattle feeders he was not worrying about losing money on his year's operations. He would not make the money he had expected when he purchased his cattle, but he figured he would break even on them due to a system he has worked out through the years for making economical gains.

Smith was standing in his barnlot looking over 120 attractive Hereford steers about ready for market when he said:

"You can pay several cents a pound more for quality feeder calves than they will sell for when fat and make money if you have the right system for a feeding program. At least that is what I have been able to do for the last several years."

When asked to be more specific about his feeding program he said:

"If you pay high prices for your feeder cattle you will have to cut the original cost somewhere down the line. I have been able to do that by making a very economical gain on my cattle before I put them on full feed in the dry lot to finish them for market. I feed

Reprinted by permission from The Cattleman
Fort Worth, Texas

silage and a little grain during the winter, and then I feed some grain and protein while grazing them during the spring and summer. Grass is a good beef maker and it is very economical because it cuts your labor bill way down.

"Take this batch of cattle for which I paid a ridiculously high price as feeders — I am almost ashamed to tell what they cost, but they had the type and quality I like. It may have been a good thing I was a little choicy because now there is quite a price spread between good cattle and choice and prime beeves, and it may stay that way for some time. Prime cattle at Chicago are selling currently from $36 to $37, and I think these steers will grade high choice. Then figure the corn they ate at $1.50 a bushel. Invoice these cattle into the feedlot at 40 cents a pound and I can show a little profit by selling them for $34 per hundred pounds."

The cattle were well bred Herefords from Wyoming. Smith decided to buy the cattle after he visited the ranch and saw the bulls and mother cows. The calves arrived at Letts on November 10, 1951, averaging 460 pounds. At an average weight of 1,060 pounds on October 14, the cattle had gained an average of 600 pounds during the 11 months they were in Iowa.

When asked if he knew just how much he had fed his cattle Smith said: "I certainly do. Each steer got four pounds of shelled corn and three-quarters of a pound of protein supplement a day during the winter. In addition each steer ate about a ton of silage and three-quarters of a ton of hay and 200 pounds of oats by the end of April.

"I turned the steers into a 40 acre pasture of brome grass and alfalfa on May 1. This is the daily amount of shelled corn each steer got each month until they were brought in and placed in the dry lot for finishing: May, five pounds of shelled corn; June, seven pounds; July, 10 pounds, and August, 12 pounds. Since September 1 they have been in the dry lot getting 16 pounds of shelled corn, one and one-half pounds of protein and six pounds of hay daily. I feed only one time each day and that is in the morning."

These figures show the cattle received the following amounts of feed each from November 10, 1951, when they arrived at the farm, to October 14, 1952. The winter feeding period was 170 days and during this time each steer consumed 680 pounds of shelled corn, 127 pounds of protein, three-quarters of a ton of hay and one ton of silage and 200 pounds of oats.

During the spring and summer grazing period the consumption per steer for the 123 day period

was 1,047 pounds of shelled corn.

The dry lot period from September 1 to October 14, 44 days, amounted to 704 pounds of shelled corn, 66 pounds of protein, and 264 pounds of hay.

Smith figured his silage at $12 per ton, the hay at $20 per ton, corn three cents a pound, oats three cents a pound and the protein feed five cents a pound.

The amounts of feed consumed for the three periods make the following totals: Corn, 2,431 pounds or $72.93; protein, 193 pounds or $9.65; oats, 200 pounds or $6; hay, 1,760 pounds or $17.60; silage, one ton or $12.

This makes the cost of feed consumed per steer $118.18. At 40 cents a pound for the calves, at an average weight of 460 pounds, made $184. These two totals made a cost of $302.18. Figuring the steers at a market weight of 1,060 pounds and selling at 34 cents a pound, they brought a return of $360.40 making a profit of $58.22 each. However, this does not take into consideration an allowance for labor for feeding and the 40 acres of grass.

When asked if he made an allowance for the fertilizer from his cattle feeding operations Smith laughed and said: "Who ever heard of paying for that, it is a hidden profit."

You can cheapen the cost of big cattle by feeding silage and grazing them during the spring and summer, but you had better buy big cattle nearer the expected selling price, warns Smith. Yearlings are a better bet than big cattle but not as good as calves. Calves, according to Smith, will make more pounds of gain for each feed unit used than any other class of cattle.

It is safer to feed high priced feeds to quality cattle than it is to cheaper grades, thinks Smith. He stresses the fact that calf feeders, in particular, must check daily to see that all animals are up and eating.

Be regular about the time you feed and the amounts you feed, is another of his rules in beef making. He considers one man feeding the cattle from day to day is better than having different men do the work. No one but Smith had ever fed this lot of Wyoming Herefords, except for one time when he went to Chicago and then he carefully measured out the feed. Plenty of good water is another must with Smith.

Another point in favor of grazing cattle stressed by Smith was the fact that it cuts deep into labor costs in operating the farm, something that is now a big item in all sections, and it adds another hidden profit by eliminating the cost of spreading the fertilizer on the land.

His crop rotation program calls for planting corn two years, one

year in oats and two years in legumes and grass. He covers 60 acres of land with barnyard manure each year. He never uses any commercial fertilizer. He has 40 acres in pasture for grazing and another 40 acres for hay to be cut. His 1952 corn crop was a little better than 100 bushels to the acre. One year by careful check one of Smith's fields of corn produced 154.82 bushels of corn to the acre.

Stopping Hay Mow Fires

In Massachusetts, action has been taken to head off disastrous hay fires in a way which may well be copied in other states. The plan was announced to all Massachusetts fire chiefs by Howard Russell, manager of the Mutual Farm Underwriters, acting in co-operation with the state division of forestry and a number of other organizations.

The plan is to make dry ice available for cooling hot hay mows—a method which has already been tried on an experimental basis in two Massachusetts counties this past summer. Briefly, here is how the plan works:

When a farmer finds that a mow of hay is heated to a dangerous point, he notifies the local fire department and a radio call goes to the nearest of six stations of the State Forest Fire Service. Special high-pressure equipment which can be rushed to the farm has been provided by the Mutual Farm Underwriters at each of these stations. There the carbon dioxide or dry ice is injected into the hay under pressure and cools the hay to a safe point. — *American Agriculturist*

Meat Production Needs to Increase

Meat production in the United States will have to be expanded to about 25 billion pounds a year by 1961 if meat consumption is to be maintained at a yearly level of 140 pounds a person. The nation's population is increasing at the rate of two to two and a half million people annually. In other words, every day there are 7,000 more persons to eat three meals a day.

To reach the consumption goal of 175 pounds of meat per person by 1961, production would have to equal nearly 32 billion pounds annually, according to the U. S. Department of Agriculture. Meat production in 1952 totaled about 22½ billion pounds.

What Size Garden Tractor?

If you are buying a tractor and equipment, you have a wide choice . . .

Condensed from New England Homestead

WHAT size garden tractor is best for a particular small farm or acreage?

Engineers have never found it possible to design a tractor that will fit everyone's needs and perform all necessary operations efficiently regardless of the size of the land area. The varying needs of individuals have contributed to and stimulated the advances that have brought tractors to their present level of perfection.

Ordinarily it is wise to power up for the heaviest jobs you will want to do. This means plowing with most tractors, but not necessarily with a garden tractor. Garden tractors of the smaller sizes have definite limitations in plowing, especially in heavy soils, in sod, or on rough ground. You should not expect to do much plowing, for example, with an engine of less than two horsepower. Even so, as compared with hand tools, a small garden tractor and plow will do an acceptable job of seedbed preparation—and easier. Once a garden plot is in good tilth it is not necessary to plow it deeply every year in order to produce a good crop. Even with the smaller tractors, most owners find a plow attachment a highly useful tool.

Generally, good coverage of trash and pulverization of the soil can not be accomplished when plowing deeper than about half the width of cut. This limits the depth to about three inches for a six inch and four inches for an eight inch moldboard. On some soils this is not deep enough for a good seedbed, but on a good loam soil where the tract is in cultivation every year, is free from roots, and otherwise in good tilth, it will often be sufficient.

Things to Remember

Sometimes it may not be economical to do plowing with a garden tractor. It is well to remember that in plowing an acre of land with a walking tractor cutting a 12 inch furrow, it is necessary to walk more than eight

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Springfield, Massachusetts

miles. With an eight inch furrow, the operator will walk at least 12 miles, and for a six inch furrow the distance will be around 20 miles. If these distances seem to add up to a lot of work and walking, it may be well to remember that it also takes a lot of spadefuls of dirt to turn over even a small garden plot by hand.

In connection with plowing, it should be remembered that horsepower alone is not the only basis for judging whether a small tractor will do an acceptable job of plowing. Traction is also an important factor. It can often substitute for a lack of additional power, although for plowing a minimum of about two and a half horsepower is desirable. Garden tractors can often be equipped with wheel weights to provide the desired traction, and experience has shown that the addition of these weights may be equally as important in good plowing results as additional engine power.

Engineers of the United States Department of Agriculture suggest that where someone is available with larger equipment to do the spring plowing, for which power requirements are usually highest, a tractor with one to two horsepower may do the other necessary work on about an acre of ground. An operator will, however, want a four to six inch plow for opening seed furrows and other light work, one section of a spike-toothed harrow, and a cultivator. Other needed equipment will depend on the jobs to be done. Most owners will certainly want a mower attachment.

On a one acre tract or less if plowing is to be done with a conventional moldboard plow, the owner will want a tractor with two and a half to four horsepower. This will handle an eight inch plow, which will turn about an acre a day. The same auxiliary equipment will be needed as where the plowing is hired to be done, including the spike-toothed harrow, cultivator and mower. Other attachments may be desirable, depending on the kind of acreage or crops grown.

Plowing can be done on an acre or less with the smallest motor tiller, but it will take time. Cultivating attachments are desirable, but the revolving tillage unit also may be run shallow for weeding between rows.

More Acres — More Power

On one to 10 acres an owner will want a tractor with three to four horsepower. Plowing can be done with this tractor and an eight inch plow, but the time required will be proportionate to the acreage. Such a tractor will also provide good power and speed for the lighter jobs. Again the owner will want one section of a spike-toothed harrow, cultivator and mower as the minimum in attachments. A four to six

horsepower engine is a good choice where a motor tiller is to be used on a tract of this size. Attachments for cultivation also are desirable if available. The utility of the tractor will depend largely on the attachments available.

On 10 acres and up where plowing is done with the conventional moldboard, the owner should choose a tractor of not less than five horsepower. This tractor will turn about two acres a day with a 10 or 12 inch plow. Attachments will be needed for harrowing, cultivating and other lighter jobs. A mower will be one of the first attachments needed by most owners. Others will be needed as experience with the tractor increases and as the jobs to be done multiply. At least six horsepower is desirable on such a tract operated with a motor tiller, with cultivation attachments.

Today the operator of a small farm or suburban acreage has a wide choice in both tractors and attachments for many jobs. Attachments are, of course, an important part of the equipment, for without them the tractor itself will not be as useful as it should.

Some owners may be inclined to expect too much of a garden tractor. As a result they may choose a machine too small for their immediate needs, and eventually want to get a larger size. It will, under such conditions, be more satisfactory and economical to choose a tractor with ample reserve power for the job to be done.

On the other side of the picture, it is wise in choosing a tractor to keep in mind that maneuverability as well as power requirements is important. The size, weight and physical condition of the operator deserve consideration; a tractor that is too big and heavy for easy maneuverability may be a poor choice where mostly light work is to be done or for a small person who is not physically equipped to handle a larger tractor easily.

Of special interest for the small operator or owner of a garden tract of a half acre or so are recently developed power tillers of one to one and a half horsepower, either wheel or wheelless types. Machines of this small size are likely to be the gardening tool of the future for small home owners.

Farm output per man-hour of labor on farms is now the greatest in history. Economists of the U. S. Department of Agriculture say it is now nearly two and one-third times what it was 40 years ago. And most of the gain has taken place in the past 15 years.

Social Security for FARM WORKERS

It's a good thing for a good hand. Here's how it works . . .

•Condensed from The Michigan Farmer

"I WANT to do what's right for Frank Harvey. He's worked for me for a long time—he's a good farm hand."

It was George Wilson, operator of the XX Ranch, talking to the manager of his local social security office.

What Wilson wanted to know was whether Harvey's farm work would count toward old age and survivors insurance.

The answer Wilson got applies to tens of thousands of other Frank Harveys who earn a livelihood by agricultural work, so let's tell it here—as if you are that farm worker.

Before you become eligible for social security credit as a farm laborer, you must first work a full "calendar quarter" for one employer. (A calendar quarter consists of the three consecutive months beginning on January 1, April 1, July 1, or October 1).

You must remain in the employ of the same employer throughout this first or "qualifying calendar quarter," although you do not necessarily have to do farm work for him. Nor is it necessary that you work any particular number of days, or for a certain amount of wages.

You do not receive any social security credit for your earnings from farm work during that period, but the work during the period qualifies you so that you can get social security credit for further work for the same employer.

During the next three month period you must be employed by the same farmer on a full time basis, you must earn at least $50 in cash wages, and you must perform agricultural work on at least 60 days. (Full time means the

Reprinted by permission from The Michigan Farmer
Detroit, Michigan

prevailing work arrangement for that type of work in your community.)

If you are ill and cannot work on certain days, if you report for work and are excused for the entire day or part of the day, if weather prevents you from working, or even if you get a vacation during that period—but get paid for these days as if you worked full time on each of them—then these days count for your social security credit. The 60 or more working days do not have to be working days or in consecutive weeks.

If you have met this regularity test, and have been paid cash wages of at least $50 for your agricultural work for this farm operator during that second quarter, your cash wages will be credited to your social security account. The word "cash" is stressed because wages in kind—rent, meals, a share in the harvest—are not counted toward social security benefits. Only the wages you receive in cash (or checks, etc.) count.

Your cash earnings in subsequent calendar quarters also will count as long as you remain in the employ of this same farm operator and perform agricultural work on the same basis for at least 60 days.

Now, let's suppose that a time comes when you are not paid for as many as 60 different days of agricultural work by your employer in a certain calendar quarter. You will get social security credit for your earnings in this quarter if your cash wages are as much as $50.

Your failure to do farm work for as many as 60 days may or may not break your continuity of employment. This continuity will not be broken, for example, if you do agricultural work for less than 60 days and then work for the same employer in some other capacity during the rest of the quarter. In that case, you could meet the 60 day-$50 test in the following quarter for the same operator. You could earn social security credits without a break.

On the other hand, your failure to earn cash wages for as many as 60 days of farm work may be because you lost or gave up your job or your farm work may be of a seasonal nature. A calendar quarter may come when it will not be possible for your employer to pay you for as many as 60 days of farm work or to keep you in his employ continuously doing some nonagricultural work.

In that case, even if you meet the 60 day-$50 test in the following calendar quarter you will not earn social security credit for that work. You must spend another qualifying quarter of continuous employment, either with the same farm operator or another one before your agricultural work could

again count toward social security benefits.

Frank Harvey does not have this problem. He is regularly employed by George Wilson on a full time basis, calendar quarter after calendar quarter the year around. In every quarter he is paid well over $50 for at least 60 different days of work.

Harvey is a typical example of a farm worker who is consistently building old age and survivors insurance protection for himself and for his family.

Wilson now understands just what to do. Four times a year, he reports the cash wages paid to his worker and pays three per cent social security tax; one-half of this tax he deducts from Harvey's cash wages; Wilson's contribution is an equal amount. He sends the reports, together with the tax to the collector of internal revenue. These cash wages are credited to Harvey's social security account.

In old age, or in case of his untimely death, this farm worker and his dependent family have the protection of social security.

Dubbing Improves Poultry Production

Poultry keepers who raise heavy combed chicks can increase future egg production by as much as 25 per cent when their pullets begin laying, according to George T. Davis, poultryman with the Wyoming Agricultural Experiment Station.

Research which Davis and other station workers conducted recently shows that dubbing, or removing combs and wattles, from chicks at an age of about 12 weeks has a definite effect on egg production. Not only that, Davis says, but feed consumption per dozen eggs decreases about the same proportion as the increase in egg production.

For instance, during experiments at the Afton substation, feed required to produce one dozen eggs was 7.14 pounds. Similar experiments at Torrington took 7.52 pounds. This compares with 9.61 pounds at Afton and 9.00 pounds at Torrington necessary per dozen eggs with hens which were not dubbed.

Although experimental evidence is lacking, response is probably caused by preventing loss of energy through the exposed areas of the combs and wattles during cold weather. This energy evidently is used by dubbed hens to produce more eggs. —*University of Wyoming*

For dubbing, sharp surgical scissors are advised. If not available locally, send $3.60 to Farmer's Digest. Ask for 5½ inch Dubbing Scissors. We will refer your order to a supply house.

1953 Chemical Weed Control

What 500 experts at Northeastern Weed Control Conference talked about . . .

Condensed from New Jersey Farm and Garden

ONE of the most promising labor saving devices in pasture, vegetable and small fruit crops is the science of chemical weed control. By the time 80 papers on the topic had been digested by more than 500 experts at the seventh annual Northeastern Weed Control Conference in New York City January 7-9, it was apparent the farmer is in for some breathtaking progress in the not too distant future.

Here are some highlights of particular interest. If you want to try some of these chemicals—some of them are not new this year — first consult your county agent or manufacturer's agent for particulars and the names of the firms that market them.

Weed Control in Corn

Both pre and post-emergence applications of 2,4 - D in corn are here to stay. More esters are now being used for pre-emergence applications and low-volatile esters are favored in several states.

The need was recognized for a material noninjurious to tomatoes when used for pre - emergence control in areas adjacent to this crop. The dinitros, Crag and esters of trichlorobenzoic acid were cited among those having promise for this purpose.

It was generally agreed that drop booms are desirable when spraying corn over 12 inches high to prevent damage to the leaves.

MCP Results Variable

Caution was urged for farmers using MCP on small grains underseeded with legumes. While a few states are recommending this practice, it was observed that even when the necessary precautions are taken, some reduction in the legume stand can be expected. Alfalfa and birdsfoot trefoil were reported as being particularly susceptible to injury.

The dinitros will be more widely used than MCP in 1953 for

Reprinted by permission from New Jersey Farm and Garden
Sea Isle City, New Jersey

weed control in grains underseeded with legumes, according to most reports. For best results one to one and a half quarts of the amine salt of dinitro in 25-50 gallons of solution per acre should be applied in spring, when weeds are very small.

Chickweed Conquered

Workers in five states unanimously agreed that the dinitros and Chloro IPC have given the most outstanding control of chick weed in alfalfa. While chickweed can be profitably controlled in new seedings and established stands, the greatest benefits have been in new seedings. One pound of the amine or ammonium salt of DN in 20-50 gallons of water per acre, or two to four pounds of Chloro IPC applied in late fall or early winter, have been the most effective. Chloro IPC should not be used where grasses are in the mixtures.

Chemical Pasture Renovation

Use of chemical herbicides as a tool for renovating old, worn-out pastures was discussed by Dr. Al Sprague of Rutgers university. When applied in mid-July, 20 to 25 pounds of active sodium trichloroacetate (TCA) in 10 to 20 gallons of water, mixed with one-fourth per cent of a wetting agent and one-half pound of 2,4-D per acre, did an excellent job of killing the sod and reduced the cultivations necessary for preparation of a good seedbed to one-quarter the work required on a live sod. A new seeding made in this way promises to last longer, too.

Perennial Weeds Tackled

Thirty to 50 pounds per acre of sodium TCA combined with tillage appeared to offer the most promise for destroying quackgrass.

Seventy-five pounds or more of sodium TCA per acre applied when nutgrass is small was the most effective method of controlling this pest. Cultivation prior to application improved the results and reduced the amount of chemical required to do the job.

Canada thistle can be effectively controlled by spraying with one-half to one pound of 2,4-D annually for two or more consecutive years, according to most workers. Satisfactory chemical control measures for certain other serious perennials, such as horse nettle and milkweed, have not yet been worked out.

Weeds in Vegetables

Emphasis was given to new chemicals for weeding vegetables and blueberries. Drs. R. D. Sweet and S. K. Ries of Cornell university, told of success with four pounds per acre of N-1-naphthyl phthalamic acid (PA for short) on the vine crops, cucumbers, muskmelons, watermelons and and winter squash. Weeds were effectively controlled while yield, flavor and sweetness of the crops

were unimpaired.

In tests on cantaloupes, Dr. E. M. Rahn from Delaware found that two pounds of a 90 per cent wettable powder of PA in 50 gallons of water per acre, when applied five days after seeding, controlled weeds for the first six weeks of the growing season with no adverse effect on the marketable yield.

More work in Delaware showed CMU at one and two pounds per acre not harmful to established blueberries. Only two sprays were required during the growing season to control weeds. Five shallow hoeings, following the initial one before treatments started, were necessary to control weeds on the hoed plots where no CMU was used.

Brush Control Results

One of the best attended meetings at the 1953 conference was that on brush control. While the talks were directed largely to the problem of killing brush along utility right right-of-ways, many good points were developed for use on the farm. Both foliage and basal bark treatments, using 2,4,5-T or a combination of 2,4-D and 2,4,5-T in oil, have been successful. Early spring applications are best when put on the foliage, although it can be done earlier with fair results.

When making treatments be sure to go all the way around the base of the growth. Four pounds of the mixture in 40 to 50 gallons of kerosene or diesel fuel work fine. Be sure to cover the growth to a height of 18 inches. Trees more than two inches in diameter should be cut by hand and the fresh stump, or resprouts, sprayed.

Herbicides Poisonous?

Dr. S. N. Fertig of Cornell university recalled that there are no known cases of herbicidal poisoning from field applications of presently used herbicides marketed as nonpoisonous. The potassium nitrate content of certain annual weedy plants is increased slightly following the application of 2,4-D and 2,4,5-T. But this increase is insufficient to cause death to animals except where excessive quantities of the particular species are available to the grazing animal. This situation is extremely rare and no cases have been reported.

Other Chemicals Studied

In addition to the chemicals reported in this summary, many other materials were described as "promising" in the northeast. These include: CMU at low rates for control of annual weeds in cultivated crops and at high rates for soil sterilization; maleic hydrazide for perennial grass control; and Crag herbicide for weed control in corn. Much more research is necessary for a full evaluation of these materials.

What About Pole-Type Poultry Houses?

When properly constructed, they provide desirable, low-cost housing

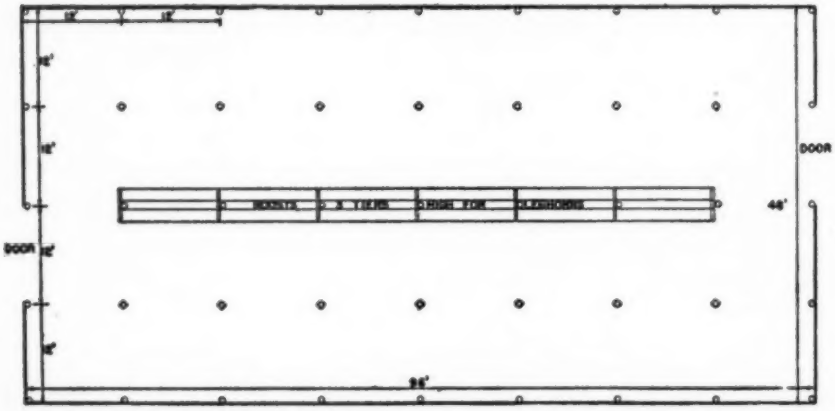
Condensed from Poultry Tribune

Paul R. Hoff

Cornell University

IF YOU need more poultry housing, but hesitate to build because of high building costs, don't overlook pole-frame construction. It is possible to build with poles and have a house that is as permanent as one with conventional frame or masonry block construction.

Chalmers Hering, Otsego County, New York, built a 48 by 96 foot house two years ago that is an excellent example of permanent pole construction. The house is complete with side walls of wood sheathing covered with shingles, tight roof deck covered with selvage-edge roofing, and eavestroughs and down spouts. Feed is stored in bins built into a



ABOVE: Floor Plan of the pole-frame constructed poultry house described in this article.

feed room over the roof of the ground floor pen. The feed is delivered by chutes to automatic feeders. Water is piped into the house under pressure into fountains.

Hering's house has a dirt floor, but a strip of sheet metal, coated with asphalt, nailed to the bottom nailing girt and extending 18 inches into the ground makes an effective rat barrier. The cost of this house complete and ready for use was $3,500. The floor area is about 4,600 square feet, making a cost of approximately 67 cents per square foot. This cost is much less than for a similar house built of conventional frame construction and set on a concrete foundation.

This past summer, Hering insulated the ceiling by applying bat insulation between the rafters and nailing reflective insulation to the bottom of the roof rafters.

An uninsulated roof on any poultry house will collect moisture on the underside and will be cold.

Most of the New York poultrymen who have built pole houses have expressed an opinion that insulation in the ceiling would improve moisture conditions in winter and keep the houses cooler during hot summer days.

There is no special type of insulation that works best in a pole poultry house. Any of the common insulating materials are satisfactory. If insulation board is used, it should be placed against the underside of the roof deck under the rafters. The insulation board needs a heavy coat of aluminum paint on the underside to keep moisture from working into it. Bat or fill type insulation also can be used for insulating the ceiling. In a shed or a gable roof building, openings in the ends above the insulation must be provided for ventilation. If the openings have louvers in them, rain and snow cannot blow in on the insulation material.

Since the frame of the house is hung on the poles, it is necessary for the poles to be set well into the ground. Using home grown poles is one of the cash savings that is possible with this type of construction. Any kind of pole is satisfactory, but only locust, red cedar, osage orange, or other native wood that is decay resistant can be used without treating.

Poles of any other wood must be treated from the butts to at least one foot above the ground line. They can be purchased pressure treated or treated on the farm. There are a number of commercial treating materials that can be used for this purpose. It is important to follow the manufacturer's recommendation in treating the poles. If it is necessary to buy the poles, your local electric power company or the telephone company may be able to furnish them or can refer you

to a source.

In sections where the ground freezes, the poles must be set to below frost level. In the northern part of the United States, three and one-half to four feet depth is necessary. About two feet should be the minimum depth where freezing does not occur.

Poles of less than five inches in diameter at the tops should not be used. The poles should be cut or purchased one to two feet longer than the anticipated length needed. The extra length makes it possible to cut the poles off evenly at the correct length after they are set.

It is necessary to set the poles 12 or 13 feet apart in each direction for the usual roof construction. Three two by six inch nailing girts, including the one at the bottom and in addition to the plate at the top of the poles, furnish plenty of support for siding.

A good roof on any building is essential, and a pole poultry house is no exception. Any of the composition roofing materials require a tight roof deck under them, and some types of roof covering can be laid on flatter slopes than others. The usual two inch lap exposed nailing application of roll roofing should not be used on a roof with a slope of less than three inches per foot. Selvage-edge or "half-lap" roll roofing can go on a roof with a slope as low as one inch per foot when applied according to the manufacturer's instruction.

Asphalt or composition shingles are suitable for roof pitches as low as three inches rise to 12 inches horizontal, but on roofs where the rise is less than six inches per foot, they must be laid with not more than four inches exposed to the weather.

Metal roofing gives protection from the weather on slopes as low as three inches rise per foot. Where more than one sheet is needed to reach from the eaves to the top of the roof, the ends must lap sufficiently to prevent water from getting into the roof boards.

With a three inch slope per foot, the lap needs to be at least eight inches, but for a roof slope of six inches or more per foot, the lap can be reduced to three inches. One of the advantages of metal roofing is that a tight roof deck is not necessary.

Any type of siding is suitable for a pole poultry house, but it should not extend into the ground where it can rot away. A strip of asphalt coated sheet metal should be nailed to the lowest nailing girt below the siding and extended 18 inches into the ground. This strip makes it unnecessary to bring the siding down to the ground level and also serves as a rat barrier.

Electronic Cow Testing

The union of IBM and DHIA may become the biggest improvement since Konradi's time

Condensed from The Oregon Farmer

David H. Mann

WHEN Emil Konradi of Denmark inaugurated the practice of cow testing in 1895, he furnished the dairy industry with its first tool for determining the value of the dairy herd as a business investment. Thus, through cow testing, better known today as Dairy Herd Improvement practice, dairy cows and their usefulness are being "weighed in the balance."

Cows that are "found wanting" go to the slaughter house and cows that make a profit for their owners are retained — they are good business investments!

Emil Konradi, the world's first cow tester, died only a year ago at the age of 79. But the practice he established a half century ago has spread throughout the world to mark continuing progress for dairymen everywhere. Today, in the United States alone, the number of cows enrolled in Dairy Herd Improvement associations has reached beyond 1,088,872, according to a late count from Washington.

While the tool furnished by Denmark was good, like many implements it could stand improvements, and in Utah, a refinement has been applied to cow testing that bids to prove as revolutionary as the original creation of the practice by Konradi himself.

As all dairy farmers know, the keeping and computing of Dairy Herd Improvement association records is a cumbersome business, to say nothing of the job of getting the results back to the interested parties. No one knows this any better than the cow testers, the county agricultural agents, the DHIA and the bureau of dairy industry. They all have their fingers in the pie and the deal consists of one whale of a lot of book work, with the heavy end of pencil pushing falling on the cow tester and the county agent.

And when too many people

Reprinted by permission from Washington Farmer, Idaho Farmer, Oregon Farmer and Utah Farmer

have a part in record keeping, computing and calculating, the crop of errors is tremendously increased, to say nothing of the time, labor and money involved.

With the idea of obtaining nearly absolute accuracy as well as simplifying the entire business of tabulating, recording, calculating and reporting DHIA records, a year ago, January 1, 1952, to be exact, the Dairy Herd association of Utah converted its entire business of record keeping and calculating over to the I.B.M. system.

While but few people outside of the agricultural industry know what DHIA stands for and in all probability just as few farmers and dairymen know what I.B.M. stands for, this, however, didn't prevent Utah State Agricultural college from uniting the DHIA and the I.B.M. in matrimony. The end result has proved so revolutionary and satisfactory that leading colleges and dairymen all over the United States have asked Lyman Rich, USAC extension dairyman, for detailed information regarding the school's new brain chaild.

"What is I.B.M.?" the reader naturally asks.

I.B.M. stands for International Business Machines, and distributors of these highly complicated apparatus say they are "electric accounting machines."

Among the many things the I.B.M. installation at the USAC will do under supervision is this: *It will calculate a dairy cow's daily butterfat production for exactly 305 days or any amount of days more or less, and it will continue to tabulate the record until the completion of the lactation!*

That's the major thing the I.B.M. installation is doing for the DHIA at USAC, and it's the first time in dairy history that these machines have been adapted to this particular use on a state-wide basis.

Few dairy farmers will miss the significance of this performance, for the end result of the data furnished by the machine as mentioned above, "proves the bull," for on this rests the breeding records on which sires are proved!

In more detailed explanation, it could be said that *the machine can and does take every individual cow in the DHIA and tabulates her complete record and accurately calculates her butterfat for every day of her lactation and does it quickly.* Before the adaptation of the I.B.M., this type of data was not available without months of record work and calculating involving numerous errors.

And exactly what does this do for the dairy farmer?

The question was answered by Prof. Lyman Rich, extension dairyman, who says: "The average butterfat production per cow

in the United States is 210 pounds. The average for all cows on test is 370 pounds. The average for all cows in Utah is 245 and the average for all Utah cows on test is 373 pounds, or 128 pounds more than the Utah cows not on test. Thus, it can be seen the testing and information gained from this practice has jumped the DHIA cows in Utah to an average production of 128 pounds more than those not on test.

This practice then ties in directly with the income available for family living. The practice of testing has increased the dairyman's income and governs his entire operation. The farmer who has DHIA records to guide him knows exactly where he is going, for it serves as a guide to breeding, feeding and culling.

"If you can get this information to him quicker and more accurately, you've increased the service to him and put him in a better position to manage his herd, and thus obtain greater profits from dairying. That's exactly what I. B. M. processing is doing for Utah Dairy Herd Improvement association members today!"

At the present time, Utah's 500 dairy herds totaling nearly 10,000 cows and representing only 8.2 per cent of the state's 116,000 milk cows are being processed by the I.B.M. and this chore occupies only about one-third of the college I.B.M. operation time (paid for by the DHIA dairymen). The machines have dozens of other uses at the school in addition to dairy herd improvement record processing.

It was Prof. Rich who fathered the idea of adapting DHIA records to I.B.M. processing on a state-wide basis. It was an idea born in 1949 while he was studying dairy problems in Europe. In Denmark, only half the size of Utah, he saw large forces of girl clerks processing DHIA records on 821,000 cows and realized that despite availability of cheap clerical help the tremendous job was burdensome and slowed to snail's pace by its own weight.

Realizing the same type of problems confronted DHIA officials in the United States, Rich returned to USAC and sold his colleagues on the proposition of adapting the I.B.M. installation already at the college to processing DHIA records.

Fortunately, the college has Bliss H. Crandall, professor of applied statistics and director of the statistical laboratory, in charge of the USAC's I.B.M. He immediately accepted the challenge.

Recently, after most of the problems were licked, following three years of intensive study and work, Crandall admitted "It was the most interesting application of record processing I

have ever worked on." Actually, he had to develop I.B.M. cards and other forms, and the biggest job was organizing the machine procedure, as well as the flow charts, all of which required months of preliminary work before the processing actually started.

Both Prof. Rich and Prof. Hunsaker are high in their praise of the work performed by Prof. Crandall, as are officials of the I.B.M. Corp. in Salt Lake City. They admit that adapting the processing of DHIA records to I.B.M. on a state-wide basis was a new procedure for which they had no criterion and credit Prof. Crandall with doing a "masterful job."

It doesn't require much imagination to see what is going to take place in the future. It is fairly safe to predict that since the cumbersome part of processing DHIA records has now been eliminated, the chance for human errors reduced to a minimum, and the time involved in the processing reduced from months and years to weeks and days, tremendous advancement will soon be the order of the day in the field of dairy herd improvement.

It's perfectly obvious that many, many more dairy herds will become affiliated with DHIA, thereby correspondingly increasing the income available for farm family living, to say nothing of the fact that other state DHIA's will investigate and adopt the system now being perfected at Utah State Agricultural college.

On January 1, 1953, just a year after the adaptation of the system, a major change in the operational routines of the entire deal has taken place.

To properly explain this new step, which *actually* is a major change, an improvement that may have far reaching effects, let's go back to before I.B.M. in Utah; in other words, back beyond January 1, 1952. In those days part of the burden of record keeping, calculating of butterfat production and report making fell on the shoulders of the tester.

As all dairymen know, the tester's job involved plenty of burdensome routine pencil tabulation, figuring each cow's record separately by the use of specially prepared butterfat computing tables. He filled out the barn sheet and the herd book. He also had to send to the DHIA the monthly report of each herd summary. At the end of each 305 day lactation period of each cow, he sent the record to the DHIA, at Logan, and also to Washington. In addition he was required to send a report to each herd owner showing what each individual cow was doing—this was the barn sheet, familiar to all dairymen. These and other duties occupied his time.

With the adaptation of I.B.M. the entire deal was changed. The tester or supervisor was furnished specially prepared cards about the size of a postcard. He marked these with a graphite pencil with check marks and mailed them to the state extension dairy office at USAC once a week. In condensed form the cards carried the routine information required. Here they were processed by the I.B.M. machines which picked up the data indicated by graphite pencil checks and made the necessary computations or calculations and finally t u r n e d out a detailed printed record in quadruplicate on specially prepared preprinted forms.

This sheet contained data on every cow in a herd, such as her identification, breed and 305 day records to date. Her production record for the month, with the number of days dry, number of days on test, her pounds of milk, per cent of fat, and pounds of fat. It also showed the feed record for the month and the total of concentrate fed to date.

One of these four sheets went to the DHIA, one to the county agent, one to the dairy farmer and one to the tester or supervisor each month.

The old herd book and barn sheet were eliminated and the farmer was furnished a loose-leaf binder for keeping his I.B.M. printed records. The supervisor found he was relieved of a large part of his work.

This was excellent, but a weakness showed up in the system. It consisted of occasional breaks in the continuity of the herd record over a period of months.

To eliminate this and other weaknesses, specialists revamped the system and put it on a new operational basis as of January 1, 1953. In the future, the cow testers will no longer mark cards with a graphite pencil and mail to the college. Instead, they will be furnished with a printed monthly cow record form for each herd in their district. On this form, the tester will fill in the morning and night milk weights, the per cent of fat and the pounds of grain fed per day, plus any change in the status of the cow. This they will mail to the college each month for I.B.M. processing. It must be kept in mind, however, that the college already has on record the balance of pertinent information relative to each cow on test.

Upon arrival of these forms at the college, key punch machine operators transfer the data to I.B.M. cards, identical to the type previously used in 1952 by supervisors; then the cards are processed by I.B.M., which result in a set of record sheets with complete DHIA data for every herd in the state. As fast as the sheets come from the machine, they are

mailed back to the individual dairy farmer, who will file the sheet in his loose-leaf binder; they are his permanent herd record, and guide to breeding and feeding practices.

In the meantime, the cow tester or supervisor will have much less routine, but great emphasis is laid on the fact that what he has to do must be as accurate as humanly possible.

As can be seen, the entire deal of processing DHIA records simmers down to the tester filling out and mailing his monthly record sheets to USAC, with the rest of the job accomplished by I.B.M. and the extension dairyman, who directs mailing the complete records to the dairy herd owner, the supervisor and the county agent. And each record then dovetails perfectly with the previous month's record.

Prof. Crandall, highly enthusiastic over the possibilities of the new system, lists these advantages:

(1) More accurate records. (2) Printed forms giving complete data for the month. (3) Production records tabulated on an accumulative basis for both lactation and yearly milk and feed records. (4) Automatic "centering system" so that records are tabulated, according to the DHIA supervisor's (cow tester) manual. (5) Greater percentage of 305 day records made available for the proving of sires so important in artificial breeding programs. (6) Feed data, especially for concentrates, reported for the current month, and accumulative for the year. (7) More definite recordings for cows entering and leaving lactation and the herd. (8) Additional important data, including the method and date of breeding, what cows leave the farm, and production and feed concentrates for the month, as well as an accumulative progress average for the herd. (9) A nonduplicative identification for each cow as she enters the herd. (10) Less labor for the tester (but requiring better trained men). (11) Monthly and annual Dairy Herd Improvement association reports available at the close of the month, for the monthly and annual reports. (12) More records as a basis for research studies.

The penalty for this series of improvements is merely this: Cost of testing in some associations and herds may be a few cents higher, but technical and dependable operator service is an absolute "must!"

It should be emphasized at this point that there are many lethal and sterility factors in dairy cattle today. This type of record keeping system offers opportunity to study breeding efficiency and may mean much in helping to eliminate sterility in the herds under record keeping practices.

Making Money From Roughages

Cornstalks, cobs, straw . . . other coarse roughages, can be used to better advantage

Condensed from The Hereford Journal

E. F. Ferrin

COARSE roughages containing feed nutrients worth millions of dollars are not being utilized by out present methods of feeding cattle and sheep. Some of this waste can be corrected by obtaining more of the feeding values from straws, fodders and the refuse from the sugar beet, sweet corn and pea crops.

In the Corn Belt, feed grains and good quality hays and silages have been so plentiful that the nutrients in coarse roughages have seldom been well utilized. Choice to prime fat cattle have been sold carrying to market from 40 to 50 bushels of corn per head. Changing conditions have made history of this plan of feeding and it is possible that it may never be repeated. The experience of Corn Belt cattle feeders during the season of 1951-'52 has made them very receptive to the program of utilizing the coarse roughages.

Cattle and sheep are especially designed for the processing of cheap roughages. They have factories in the rumen or paunch which are equipped with machinery for getting valuable nutrients out of such feeds as hays, straws, fodders and even ground corn cobs. Recently, the corn crop of the United States has averaged around three million bushels yearly. The cobs from three-fourths of this crop amounting to nearly 16 million tons have been largely wasted. Only 65 per cent of the total feeding value of the corn plant at maturity is in the ears. When the grain is harvested most of the nutrients of the cobs, stalks and leaves are lost. The feeding of corn silage saves nearly all of the total nutrients, but only one-twentieth of the corn acreage goes into silage.

The example of the wastage of nearly one-third of the feeding

Reprinted by permission from The Hereford Journal
Kansas City, Missouri

value of the corn crop is a conspicuous one, but in every part of the United States there is a failure to recover much valuable feed for cattle and sheep. In the state of Washington the 1951 sweet corn crop for processing was raised on 10,627 acres. Approximately 100,000 tons of stover could have been used as feed and the manure returned to the soil instead of the use of the stover as fertilizer. Only about one-third of the weight of the harvested ears becomes human food so there are around 37,000 tons of cannery waste which makes good silage. Experiments reported in Washington Bulletin 286 show that this sweet corn refuse silage is nearly as valuable for feed as silage made from well eared field corn.

Pea vines amounting to 500,000 tons yearly are slightly superior to alfalfa hay for feeding to fattening cattle according to Washington experiment station reports. The nutrients are being reasonably well utilized for livestock but there is a possibility that more research work will lead to surprising discoveries such as recently reported from Corn Belt stations. Pea straw, little used as a feed, is about 75 per cent as valuable as alfalfa hay for fattening steers.

Beet tops produced in Washington amount to about 230,000 tons of good material for silage. According to experiments at several stations, including Washington and Minnesota, the ensilage is two-thirds as good a feed as well eared corn silage. Greater use, no doubt, can be made of beet tops, mint hay and other local roughages if research work parallel to that of the last few months in the Corn Belt is conducted.

This problem of better utilization of coarse feeds is, of course, partly an economic one as well as a nutritional study. Higher levels of grain and protein concentrate prices as well as the changes in livestock prices are parts of the whole picture. Improved and new machinery now make it possible to do, on a large scale, the work of handling the low value feeds which was not economically possible with hand labor.

Another Factor to Be Considered

There is another factor in the whole problem of feed costs and livestock product prices which probably affects the eastern farmers more than those in the Pacific northwest. This is the tremendous increase in poultry production and the consequent greater competition for grains and protein concentrate feeds. Poultry, hogs and dairy cattle turn concentrate feeds into human food more efficiently than do beef cattle and sheep. Estimates of the use of concentrates by different classes of stock are made annually by the Feed Survey Committee of the

American Feed Manufacturers' Association. For the feeding year of 1951-'52, on a national basis, swine will consume 45 per cent of the grains, mill feeds and protein concentrates available. Poultry will take 23 per cent, dairy cattle 17 per cent and beef cattle and sheep combined 13 per cent.

These recent developments in animal agriculture are the factors which account for the great urge to do more to salvage the feed nutrients of coarse roughages with cattle and sheep.

Coarse roughages have high percentages of two types of compounds, cellulose and lignin, which are the skeletal materials of plants. Both are nondigestible by the enzymes of the stomach and intestines which work on proteins, starches and fats. The proportion of lignin is much higher in mature plants than in young, high moisture plants. The paunch or rumen of some animals (known as ruminants) has special equipment to partially digest cellulose but the lignin of roughages escapes. Billions of living organisms, bacteria and protozoa constitute the special machinery in rumen digestion. The word commonly used to identify them is microorganisms.

It was recognized many years ago by scientists working with animals that many peculiar and unusual digestive processes occur in the rumen as contrasted with the true stomach and intestines. But only in the last 10 years have many experimenters concentrated on studying rumen digestion. From the practical viewpoint, the work of Paul Gerlaugh and Wise Burroughs at the Ohio experiment station initiated the large scale programs of the present. They demonstrated that when corn grain and ground corn cobs are fed under ideal conditions to fattening cattle the cobs can yield 60 per cent as much nutrients as the grain.

The present experimental work can be described as a program to improve the standard of living for the micro-organisms which inhabit the paunch. As stated by the Ohio workers, "Good bacterial nutrition means good roughage digestion. Poor bacterial nutrition results in poor roughage utilization."

The micro-organisms of the rumen have four general nutritive requirements: (1) for energy; (2) for protein or the constituents of the proteins; (3) for inorganic compounds and (4) for vitamins. Efforts to perfect feed mixtures to enhance the digestion of the coarse roughages have resulted in the Purdue Supplement A, which has been widely publicized. In June, 1952, the Iowa experiment station reported fully as satisfactory results with Iowa Cattle Supplement 1 and Iowa Cattle Supplement 2, fed as a

check against the Purdue mixture.

Purdue Supplement A as fed in this experiment was practically identical with the recommendations of the Indiana station. A ton of the mixture was composed of:

	Lbs.
Soybean oil meal	1,286
Molasses feed (45% molasses	572
Bone meal	102
Iodized salt	34
Vitamin A and D oil (2250/300)	6

The Iowa Cattle Supplements on the ton basis consisted of:

	No. 1	No. 2
Linseed oil meal	1,200	666
Urea feed	458	214
Bone meal	240	134
Iodized salt	64	36
Trace mineral elements	16	8
Vitamin A and D oil (225/30)	16	8
Live yeast feed	6	
Distiller's grains		666
Molasses, cane		268

The proportion of urea in a concentrate mixture should be less than five per cent because of the toxicity of ammonia which is released during digestion. Therefore, supplement should be diluted with five pounds of ground corn per pound and two and a half pounds of ground corn should be mixed with each pound of Supplement 2.

Chopped corn stalks were fed at the rate of seven pounds per steer daily (dry matter basis) with Purdue Supplement A and also Iowa Supplement 1. Three pounds of mixed hay, small amounts of salt and of minerals were also fed daily. Cracked corn, 8.6 pounds, and Purdue Supplement A, 3.16 pounds, were checked against corn, 10.42 pounds and Iowa Supplement 1, 1.29 pounds. Rate of gain per steer was slightly higher in the lot fed the Purdue supplement. The cost of feed for a pound of gain was 25.6 cents on the Iowa 1 mixture; 25.5 cents on the Purdue supplement, and 27.3 cents on an ordinary Corn Belt fattening ration containing 16.54 pounds of corn daily per steer. The cattle fed on this standard ration sold for $1.75 more per hundredweight and made a greater margin over feed costs.

Corn Belt cattle feeders are not going to abandon immediately the old methods of heavy feeding of grain, but the Purdue and Iowa work has demonstrated how more beef per acre can be made at cheaper costs.

Low cost methods of making silage are a part of the new developments. Trench silos have been used for many years but silage made in stack above ground is getting quite a play. If thoroughly packed with a tractor and some means of avoiding heavy spoilage at the sides and top of

the stack are used, the on top of the ground silo may become popular. Experience has shown that good silage is made from pea vines and sweet corn refuse in stacks without any protection on the top and sides if the material is wet enough. Low costs of handling and storing cheap roughages are a necessary part of the more efficient utilization of the feed nutrients they contain.

Some of the recent changes in the relationships of feed and livestock prices present tough problems for the farm operator. The crop farmer will be helped if some of the by-products now little utilized can be made valuable for livestock feed. What helps the livestock producer also benefits the men who sell crops for cash.

Cost of Pasture Improving

The cost of improved pastures looks pretty big to a dairyman who has never tried it. It will continue to look big if the only thing seen is the dollar sign on fertilizer, lime, seed and labor required.

H. A. MacDonald of Cornell suggests that you look at it from another angle; namely, that you have an investment in land and fences and that you are paying taxes on pasture which is only partly used if it remains unimproved. "The situation," he says, "is similar to building a silo and using only part of it."

Speaking of pasture, George Serviss points out that an unimproved pasture will average enough feed to maintain a cow while she is producing 1,000 pounds of milk per acre. In other words, an acre of unimproved pasture will average to give about 30 days' grazing. Full use of that acre through modern pasture improvement methods will give at least 4,000 pounds of milk per acre per year, and some tests have shown as much as 8,000 pounds per acre.

— *American Agriculturist*

North Carolina Experiment Station has succeeded in increasing the tensile strength of cotton fibers by 50 per cent by crossing upland cotton with wild plants. Scientists now are trying to develop a plant combining this tensile strength with the desirable features of upland cotton.

Soil treated with soil conditioner reduced plow draft by 25 per cent in University of Illinois tests.

Ladino Clover for Orchard Soil Cover

Give Ladino a trial in your orchard and it will be your friend for life

Condensed from The Southern Planter

Dr. C. O. Dunbar

Maryland Field Laboratory

LADINO clover has been used as a cover crop in orchards since about 1935. The acreage of Ladino clover in orchards today runs into the thousands.

No orchard cover crop is 100 per cent perfect, but Ladino comes about as near being an ideal apple cover crop as could be wished for. It is very easily established, the cost of seed per acre is low, and it will grow on both upland and bottomland soils of either low or high fertility. It is a perennial and will last for several years if properly managed.

In one western Maryland orchard, there is a stand now in its seventh year and the percentage of Ladino in the cover is still very high. Ladino in the orchard should be mowed three or four times annually and fertilized liberally with phosphorus and potassium.

While the lime requirement is lower than for alfalfa or sweet clover, Ladino clover will respond to lime and a pH of around 6 to 6.5 is satisfactory. Where lime, phosphorus and potassium are adequately supplied, the Ladino leaves will be larger, it will have longer stems and the total tonnage will be much greater. Proper fertilization together with three or four annual mowings will enable it to compete better with weeds or undesirable grasses. Failure to mow frequently enough, or lack of the right fertilizer, or both of these factors, has very often been the reason for a nice stand of Ladino to disappear.

How to Get a Stand

Ladino clover has been successfully seeded: (1) on prepared seed beds in April or early May, (2) on frost cracks in grain during February or March, and (3) on a prepared seed bed in late

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Richmond, Virginia

August. The first two of these methods have almost always been successful, but seeding in late August is only advisable in years of abundant rainfall.

If a prepared seed bed is used, it should be fine and cultipacked both before and after seeding. Seeding on a rough, coarse seed bed will result in only a partial stand because the seeds of Ladino are very small and will be buried too deeply.

Ladino clover may also be seeded on top of the ground during February or March on frost cracks in grain and good stands have been obtained. However, if seeded in this manner, the grain should not be allowed to mature but should be mowed when it is 18 inches high and a second time if it grows again. Ladino clover seedlings are so small that they cannot stand the shade and moisture competition of grain as well as the larger seedlings of red clover.

Our most successful orchardists use about 300 pounds per acre annually of an 0-20-20 fertilizer for the Ladino cover alone and, in addition, use sufficient nitrogen for the trees in the form of ammonium nitrate, nitrate of soda or other sources of nitrogen. Occasionally, an 0-19-19 plus Borax fertilizer such as is used with alfalfa, has given excellent results with Ladino. Avoid using high nitrogen fertilizers such as a 10-10-10, for too high a nitrogen ratio will encourage weeds and grasses and drive out the Ladino. There appears to be no one fertilizer that is best for both the trees and the cover crop.

In the orchard, Ladino has been seeded either alone or with grasses. We like the following mixture best and at the suggested rate per acre:

Ladino clover .....1 pound
Meadow fescue .... 2 pounds

We have also tried seeding Ladino with orchard grass, brome grass, tall meadow oat grass, ryegrass and others, but prefer the meadow fescue. The other grasses are too aggressive and tend to drive out the Ladino. This is strictly for orchard recommendations, however, and would not be true for pastures where both orchard grass and brome are far better companions for Ladino than meadow fescue would be.

Buy Best Grade of Seed

The one pound of Ladino clover seems a very small amount, but because there are about 700,000 seeds in a pound, this will give 16 seeds per square foot if seeded at the rate of one pound per acre.

If you have never seeded Ladino clover before, you may at first think that your seeding has been a failure, but do not destroy it until at least a full year has passed. Ladino clover is a creeper, and if you start with even a

single plant per square yard, by the end of the second year you will have complete ground coverage.

Buy the best grade of Ladino seed obtainable. It is impossible to separate white Dutch, alsike and Ladino clover seeds, for they are nearly the same size and cheaper lots may have too much alsike or white Dutch in them. These two clovers are all right in their place, but they cannot replace Ladino as an orchard cover crop.

While Ladino clover appears to be ideal for bearing apple orchards, it should not be used in either peach or sour cherry orchards, or young apple orchards. All cover crops are heavy users of soil moisture and peach and sour cherry fruit size will be severely reduced during drought years. In the case of young apple trees, growth would be retarded.

For peach and sour cherry orchards, as well as young apple orchards, confine cover cropping to over-winter covers such as rye, crimson clover or vetch. A mixture of all three of these has worked very well in the Cumberland - Shenandoah fruit area. These particular plants make most of their growth at a time when the fruit is not on the tree.

Bearing apple orchards in Ladino clover have yielded well and, without question, soil fertility has been improved greatly. Give Ladino clover a trial in the apple orchard and it will be your friend for life.

Farm Land Prices Decline

Farm land prices are slipping in some areas because farm prices are low, says Margaret McDonald, extension economist at Ohio State University.

From July to November, 1952, Ohio real estate prices dropped one per cent. This was the first four month period since the beginning of the Korean war that land prices did not go up. Most states had about one per cent increase during the same period. Miss McDonald blames the steady decline in prices of farm products for the real estate price drop. Lowering cattle prices, for example, probably checked demand for pasture and grazing land.

Land prices are going up in some areas around new industrial sites but Miss McDonald says, "Further easing in land prices—especially of poorer farms—could continue this year because of higher farm costs, lower farm product prices and lower net income."

— Ohio State University

New Studies on

BLOOD TYPES IN CATTLE

They can help you identify the sire of a calf,

determine whether twin calves are sterile,

develop heredity research

Condensed from Holstein-Friesian World

David A. Wieckert

HUMAN blood types A, B, AB and O and their importance in blood transfusions are familiar to all. Within the last decade, research important to every dairy farmer has been conducted to determine if animals have similar blood types.

With dairy cattle this work has been unusually successful. Instead of just four, there is almost no limit to the number of possible types. Probably no two animals, except for certain sets of twins, have the same blood type. Application of this knowledge makes possible many scientific aids to the dairy farmer, among them determination of parentage and identification of free-martins.

Dairy cattle have blood factors or antigens similar to the A and B antigen in human blood except that cattle have many more. In 1943 there were 30 antigens known; today there are over 80. Each of these antigens is a different protein, different from each other and from any other protein. These proteins are found in the blood of the animal as a part of every red blood cell. An animal's blood type is the listing of all the antigens each red blood cell contains. Here is where the tremendous variation is possible. An animal may have any number of the 80 in any combination.

Blood antigens are simply given a letter of the alphabet for a name similar to the A, B and O in humans. Letters with primes have been used after the 26th one was discovered, A', B', C' etc.

It is possible to test for these antigens because animals will pro-

Reprinted from Holstein-Friesian World
Laconia, New York

duce substances known as antibodies. When any foreign material invades the blood stream, the body produces an antibody to remove it since the blood stream can tolerate no foreign substances. The foreign invader might be a disease germ or a virus. The antibody produced is specific for this one substance, however. If a different protein invades the blood stream, the body must produce a completely different antibody to remove it. Vaccination is also based on this fact. In vaccination, the weakened disease germ is placed in the blood stream. The animal immediately builds antibodies against this germ and destroys it.

These antibodies remain active in the blood for a period of time after the germ has been killed, sometimes for a lifetime to kill any other similar germ. However, if the germ of a different disease invades the body, these antibodies can not remove it. Different ones must be produced.

It is now possible to isolate the antibodies of the different blood antigens. Then the test for the blood factor is quite simple. In a test tube is placed two drops of fresh blood, usually only the washed red blood cells are used, two drops of antibody serum, and one drop of complement. The complement is usually rabbit serum and is necessary to make the reaction visible and easily read.

For an example, let us suppose we are testing a sample of blood for factor L. If the blood does not contain this factor, there will be no reaction and the red blood cells which are heavier than the serum will collect at the bottom of the tube. If the blood does contain factor L., however, the antibodies will remove this factor and in so doing will destroy the red blood cells. The hemoglobin or red coloring in the red blood cell will be released and all the liquid in the tube will have a uniform red color. A clear solution shows a negative test; a red solution is positive.

Probably the two most important principles in blood typing are (1) an antibody will react with only one blood antigen and (2) the only way an animal can have the blood factor is to inherit it from one of its parents. If a calf has a certain antigen, either its sire or dam or both must have had that antigen. If a calf is type AGHOWK'M', and its dam is type AJNWM'PT', then the calf must have inherited GMOK from its sire. Any bull who has these factors could be the sire, so with only this information we cannot definitely say that a certain bull did sire the calf. We can say that all who do not have antigens GHOK' couldn't be the sire. If you know that one of a group of bulls is the sire you can eliminate

all those without the correct antigens. For the above calf, of two bulls whose types are AGLO-BK'M' and AGHMOF'K'S, only the latter could be the sire.

All sires used in artificial breeding must be blood typed. Then if there is ever any doubt as to which bull sired a certain calf, the calf and dam can be typed and with this information the correct sire can be determined. Because there are millions of possible types and every animal has many antigens, it is not likely that more than one bull in a stud could be the sire even if they are closely related.

If a cow is rebred artificially twice within 10 days to different bulls the farmer could not be positive to which service the cow conceived. In order to register the calf he must have the cow and calf typed and then the correct service can be determined.

Another use being made of this work is in the study of heredity. It is hoped that by studying how blood types are passed from generation to generation we can learn more about how milk production and type are inherited. At first it was thought that each factor was transmitted individually. Now, however, it appears that a sire may transmit several antigens, often five or six, as a group. Every offspring that has one of the group also has the others. As these special groups are learned for a particular sire, they can be used to help characterize him.

Another interesting study is determining which heifers born twin with a bull are free-martins. Identical twins will have the same blood type but since fraternal twins result from two eggs there is almost no chance that they will inherit the same blood types.

A free-martin develops when the blood of the twins is mixed before birth and the male hormones which are produced earlier hinder the development of the female reproductive organs. In this case the blood types would be exactly alike since the blood has been mixed. If the twin heifer were not a free-martin, there would have been no interchange of blood and the twins would show different blood types.

It is not often that research so relatively new can find such immediate value. However, this work is still in its infancy. Annually new antigens are being discovered and methods are being improved. One of the important tasks now is to set up new stations here and in other countries. There have been only three stations in the United States equipped to do blood typing and as the volume of business increases expanded facilities are needed. The discovery has already proved very important to the dairy cattle breeder and it has even greater possibilities for the future.

Fun and Fellowship

Homegrown recreation week prescribed 25 years ago for sore community spirit is still good medicine for the "Heart of Ohio"

Condensed from Capper's Farmer

James W. Gooch

VISIT a bit around Centerburg, Ohio, and you are sure to be cornered by friendly residents who are eager to point out the good things about this "Heart of Ohio" community.

They won't boast, but their pride shines as they tell you of their rural fire department, a wild life conservation club, a 14 acre park and a top-notch centralized school system. They are sure to bring up Community Week, a midwinter event, that has sparked life into most of the local improvements during the last 25 years.

Old-timers remember when they couldn't have said five words in praise of Centerburg without setting off an argument. That was back in the twenties when the community was converting to a consolidated school system, one of the first in Ohio. Outlying one-room schools were being sold for grain bins, and children were being hauled in wagons to a town school building. Without their schools the little neighborhoods around Centerburg were left without a tie to bind folks together. They no longer "belonged." And when a new $100,000 school was completed in Centerberg in 1924, it became a focal point of their ire. They saw it only as an unnecessary tax burden.

George Everhart, now Knox county agent, was the vocational agriculture teacher then. He saw the new school as a means of knitting the community together. It was his idea to open the building for a Community Week. He would plan a series of events that would encourage good will, recognize and stimulate local achievement and introduce worth while activities into the community. By inviting the people of Centerburg and outlying districts to participate, he believed it would be possible to forge one strong community centered around the new school, from the straggling neighborhoods.

Emphases in the program have

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Topeka, Kansas

been changed but the original objectives have not been forgotten. Today, as in 1925, officers and committee members are selected from all organizations and neighborhoods. The first Community Week was held successfully in the school. The 25 annual Weeks have headquartered in the same building.

Five town and two r u r a l churches went together to conduct the union church services on opening day of the January, 1952, meeting. Sunday school, morning and evening c h u r c h services rounded out the day's program. The high school mixed chorus sang at both services.

More than 500 persons crowded into the gymnasium for the Monday evening fish fry. A committee headed by a Knox county farmer, Ralph Oliver, cleaned and fried 350 pounds of fish.

First hour after dinner was taken up by a "penny pitch" for the children, recognition of oldest mother, and the usual clusters of conversation that spring up when old friends meet. Later grownups remained in the gymnasium for a square dance and the children bounded up to the auditorium for a liberal s h o w i n g of cartoon movies.

Songs, instrumentals, skits, tap dances—Superintendent Thomas W. Figley scheduled a variety of numbers for School Night. Band members had a chance to show off their new uniforms. Grade students received prizes for posters made to advertise the event. On Speaker Night, the guest spot was given to Boyd Macrory of Ohio Wesleyan university.

Novelty acts and comedy plays drew a capacity crowd to the auditorium on Grange Night. Entertainment was provided by the four granges of the area: Weaver, Milford, H e a r t of Ohio and Porter.

Door charges for Community Week events are kept at a minimum. Last year you could buy a season ticket for $1.25. It requires about $500 to finance the five day meeting. Officers save back $300 each winter for the following year's program. Extra cash is turned over to a community improvement project.

It's evident that the annual meeting has had much to do with shaping Centerburg into the prosperous center it is today. Weathering the depression, a bank failure and some devastating fires, the town has maintained a steady population, just under 800. This, despite the fact that big city industrial plants can be reached by a 30 mile drive in almost any direction.

What's more, there is no downward trend in the number of dairy, livestock and grain farmers surrounding the town. In fact, 300 persons employed by industrial plants prefer not to pull

stakes and leave. Many drive 30 miles to work, five days a week, so they can guide a garden tractor over a small farm on week ends.

As for farmer-business relations, Centerburg is a model community. Many farmers have homes in town and several merchants live on rural routes. All work together in Grange and civic clubs. Smith Welch, president of the 1952 Community Week, says not a single person refused to serve on a committee.

When residents of Centerburg's big school district decided to develop a 14 acre park, money collected at Community Week paid for tables, benches and outdoor fireplaces. On ground-breaking day, businessmen arrived with building materials to find an array of farm tractors and implements on the scene. Farmers were busy leveling and draining land and constructing a dam for a small lake.

The same kind of co-operation is responsible for the organization of a rural fire department. Volunteers signed for service in the new department last year after the purchase of two new fire trucks, a pumper and a chemical unit. Rural homes are numbered and located on a township map. Volunteer firemen are urging farmers to make sure there is an ample water supply close at hand.

The people that keep the "Heart of Ohio" ticking are also proud of their conservation club. The 200 members protect wild life and promote good sportsmanship. Land owners raise and release pheasants. They keep a bird count on each farm and limit hunting to insure survival of adequate seed stock.

What do taxpayers think of their expensive school building now? Voting records reveal that a school bond has never been voted down. A farm shop was added in the late thirties. Work is under way now on a new gymnasium. The addition plus remodeling of the main building will be paid for by $270,000 worth of bonds approved within the last four years. The remodeling and expansion project will provide adequate room for the 12 grade school, which offers study courses in vocational agriculture, home economics, business, music, art and college preparatory subjects.

"Sure, there were some who didn't want to give up the one-room schools 30 years ago," says A. B. Priest, dairy farmer. "Community Week has done a lot in getting us to pull together."

Agricultural officials estimate that from five to 10 per cent of all stored grain is destroyed by insects alone. Rats, mice and birds consume another five per cent.

Do Sheep Take Too Much Work?

Condensed from The Sheepman

A. L. Pope

University of Wisconsin

A SERIOUS problem in sheep raising involves labor. This statement sounds strange because small labor requirements have been claimed to be an advantage of sheep. Per dollar returned they have required less labor than other livestock. But was that true in 1952 and will it be the case in the future? Many farmers are apparently doubtful, since they have used it as an excuse to go out of the business in recent years.

We have seen the development of much labor-saving equipment in the past decade and we will see considerably more. Some people predict that less than 15 per cent of the population will live on farms in only a short time. Others state that farms will be larger and that there will be even more trend toward specialization instead of diversification. Certainly it does not look as if the future holds an oversupply of labor in store. In what position will farm flock sheep production find itself if it still requires as many man hours per ewe?

Not many years ago 27 hours of man labor were required to produce an acre of corn. Now on well mechanized farms it requires only eight hours and production is greater. It is estimated that the man hours of labor to produce 100 pounds of pork has been reduced one-third in the past decade. Milk production, too, shows a similar situation.

At the Spooner (Wisconsin) branch experiment station it required 418 man hours to care for a flock of 41 ewes last year. This amounts to about a 10 hour day per ewe and these values seem surprisingly high. The management in this case was good—it had to be, to raise a 151 per cent lamb crop.

What labor saving steps have been developed for the farm flock raiser in the past few decades?

Reprinted by permission from The Sheepman
Lexington, Kentucky

They are few. One is the use of rotenone powder to control ticks and lice. It has almost completely displaced the dipping vat in Wisconsin. By penning a few ewes at a time in a small area, the dust can easily be applied over their backs. Any garden duster works well and the powder doesn't have to be driven into the skin. Apparently it acts as a fumigant, and the ticks migrate sufficiently so that it does not have to be spread over the entire sheep. Few methods have been so popularly received by farmers in this state.

It seemed for a while that phenothiazine mixed with salt would be one of the best labor saving techniques ever available to sheepmen. It has helped some, but our farmers find that the flock still has to be drenched a minimum of four times each year for maximum production. The ewes are drenched with liquid phenothiazine before they are turned on pasture in the spring. The entire flock is drenched with lead arsenate or tenatol in June for the control of tapeworms and the lambs drenched with phenothiazine at weaning time in July. Copper-nicotine sulphate is used to drench the ewes two weeks before breeding when they are turned on flushing pasture. This is all in addition to feeding phenothiazine in salt throughout the pasture season—so it seems that there are as many drenchings as ever.

It is difficult, then, to think of many new, labor saving steps in the sheep business. In the winter they must be fed twice each day. The ewes must still be checked closely at lambing time. Lambs must be docked, castrated and creep fed. Too many commercial sheep raisers either do not have or do not take the time to dock and castrate their lambs; they lost $80,000 at one large market last year by not doing this job.

Sheep still need to be watched for fly strike in the summer, and to make sure some are not on their backs or bloated. They have to be confined with good woven wire fence. Dogs and predatory animals still cause large losses and extra labor.

Profitable sheep production at the present time does require considerable labor. The important question is whether or not our industry is keeping pace with labor saving progress in similar fields. Perhaps it is impossible, but some people say the only difference between the impossible and the difficult is that the impossible takes more time. We should take this attitude in the sheep business.

More attention to the selection of breeding stock should help over a long time period. Ewes and their offspring that lamb easily and raise many pounds of lamb with less care on the part of the caretaker should be selected.

There is a difference between individuals within a flock and within a breed in this respect. We should take advantage of it.

Emphasis on longevity and selection of ewes from families that excell in this regard would be beneficial. Ewes that do a good job and still require the fewest man hours per year should be given credit.

It would help, too, if our future markets could handle a large type lamb, thus spreading the labor cost over many more pounds. Problems exist here to be sure, but we have an increasing population that will want more meat of some kind. This will take considerable consumer education and this is a slow process.

There are, of course, many management steps of a preventive nature that save labor. Good feeding is most important. Good equipment and a complete medicine cabinet are helpful. It is important to have the right sized unit of ewes to cut labor costs. low.

The development of new compounds that would eliminate internal parasites, prevent fly strike and cure the most common ailments of sheep would be an important asset. These are problems of the laboratory but should be urged by the producer.

Any new ideas that will cut labor costs for sheepmen will put the industry in a more favorable position. We will undoubtedly be forced to match future labor costs of wool production more and more with foreign producers. These labor costs will need to compete, too, with the production of synthetic fibers in the years ahead. Our future labor requirements of producing lambs will have to compare favorably with that of beef, pork and poultry.

No type of production can remain static in this competitive era. The sheep industry has too rich a heritage to allow its methods of production to lag behind.

Butterfat vs. Vegetable Fats

Dairy calves fed whole milk enjoyed normal growth while calves fed various vegetable oils homogenized in skimmilk could not survive more than a few weeks, according to research conducted by Dr. T. W. Gullickson of the American Dairy Association. This and other discoveries will be followed up in a new research project. It will compare the nutritional difference between butterfat and vegetable fats in various diets, especially as related to man. The project is under way at the University of Minnesota.

—*New Jersey Farm & Garden*

Flavor of Milk

You can't promote off-flavor milk. Causes due to production can be eliminated

Condensed from The Ayrshire Digest

H. C. Moore
University of New Hampshire

THE selection of dairy products with a good flavor, particularly milk, dates back to the early use of this product. Early American agricultural writers, apparently recognizing that the consumption of dairy products as human food depended primarily upon their taste, cautioned the dairyman concerning certain feeding and milk handling practices.

The nutritive value and wholesomeness of milk are controlled largely by state dairy laws and city ordinances which define the requirements as to minimum fat, solids-not-fat, and maximum bacteria content. Palatability, however, does not lend itself to legal definition and regulation. In determining palatability and aroma, the consumer can employ the senses of taste and smell for the judging of milk quality.

If the consumption of fluid milk is to be increased or even maintained, the product must be kept uniformly palatable from day to day. In recent years the value of milk in nutrition has been so well explained by scientific workers that officials of the public schools have attempted to stimulate the habit of milk drinking among children. Health authorities and many physicians have encouraged the regular use of milk by adults also, because of its value in nutrition—its calcium and vitamin contents, and the quality of its protein, fat and carbohydrate constituents. If milk has an unpleasant flavor, many persons will not use it, or they will take only limited quantities when a larger amount would be beneficial. Children are especially sensitive to off flavors.

In a survey of the household use of milk it was found that among those persons who were not using milk, 49 per cent of the adults and 50 per cent of the children expressed a dislike for it. Many a grown man or woman will tell you flatly, "I don't like

Reprinted by permission from Ayrshire Digest
Brandon, Vermont

milk." You can argue about calcium, elaborate on vitamins, and talk about proteins, and when you're finished, they'll only say, "I don't like milk" and go right on missing the best food that nature ever put together. Nine times out of ten, the trouble is that they once took a drink of off flavored milk.

Probably no other food has a flavor that can be ruined as quickly as that of milk. Putting into the hands of the consumer a fine flavored milk is a two-fold responsibility, that of the producer and that of the processor-distributor.

In discussing flavors in milk, it should be remembered that abnormal flavors in milk are due to one of four causes: (1) physical condition of the individual cow (2) highly flavored feeds and weeds (3) odors absorbed by the milk during or after milking and (4) biological and chemical changes in the milk.

Of these four causes of abnormal flavors in milk, strong flavored feeds and weeds are the cause of a large percentage of the off flavors found in milk as delivered by the producers. There are a great number of feeds and weeds that impart their flavor to milk.

It has been shown that most feed flavors are more pronounced in the cream than in the milk from which the cream is taken;

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feed flavors generally are less pronounced in pasteurized milk than in the same milk before pasteurization. Of greater importance, however, is the fact that feed flavors are transmitted to milk mainly through the body of the cow and, as a rule, only a few hours after the cow consumes the feed. Because of this fact, most highly flavored feeds can be fed immediately after milking without affecting the flavor of the milk produced at the next milking. In fact, in the case of green alfalfa, it has been shown that changing the time of feeding from one hour before milking to three hours before milking decreased the intensity of the abnormal flavor; and feeding five hours before milking practically eliminated it. On the other hand, large quantities of feed like cabbage and turnips, even though fed immediately after milking, may at times slightly taint the milk produced at the next milking. These taints, however, are slight and would seldom be noticed by the average consumer. Feeds that had only a slight effect when fed before milking had no detrimental effect when fed after milking.

As has long been recognized, milk may absorb the odors of some fruits, vegetables, chemicals and other materials. In addition, it readily absorbs odors from paint, coal tar disinfectants, gasoline, kerosene and some fly sprays.

The amount of odor absorbed from these substances where milk is being handled depends upon the efficiency of ventilation. Milk stored in a refrigerator box may also take up the odors from fish and other foods, cooked or uncooked, unless it is enclosed in a tight container.

The physical condition of the individual cow may be a source of various abnormal flavors in milk. A salty taste is frequently observed in milk from certain cows that are advanced in lactation, and also from one or more quarters of udders previously affected with mastitis. The first type of salty milk may be detected by examining for taste the milk of all cows advanced in lactation. After cows producing such milk are identified they should be removed from the milking herd. Saltiness of milk resulting from mastitis is more easily detected from the appearance of the milk itself, and it goes without saying that mastitic milk should be eliminated. We seldom find mixed milk with a salty taste because of the dilution of abnormal with normal milk.

Individual cows are frequently encountered that produce milk which becomes rancid a few hours after production. These are usually cows that have been milked for longer than the usual lactation period; but occasionally this flavor appears in the first month of lactation.

This rancidity is caused by the enzyme lipase. Cows producing such milk should be detected and removed from the herd, for unlike salty milk which loses its identity, rancid milk will cause a much larger volume of milk to become rancid.

Biological action is the source of more abnormal flavors in milk than the physical condition of the individual cow. But the flavors produced are similar in that they vary over a wide range and it is impossible to tell what flavor may be expected from biological action. The flavors most frequently produced by biological action are usually termed bitter and unclean. The flavor is most frequently due to putrefying bacteria and these usually find their way into the milk from unclean utensils or through other unsanitary methods of production. The remedy, therefore, is to see that all utensils with which milk comes in contact are thoroughly washed and treated to kill bacteria, and to use other sanitary methods of production.

Abnormal flavors in milk as delivered by the producer may be prevented by adopting the following practices: Feed all high flavored feeds immediately after, never just before, milking. Remove cows from infested pastures from four to seven hours before milking. Use dairy utensils which have been properly washed and

treated to kill bacteria. Milk in a clean, well ventilated stable. At frequent intervals examine for flavor the milk of individual cows and remove from the milking herd all cows producing abnormally flavored milk.

It's true that a good product almost sells itself. But once a company introduces this high quality product it must consistently maintain that quality. Developing prestige through quality is a long time proposition and this prestige can be blown sky high by a few oversights. One quart of off flavored milk can tear down hard won prestige in a hurry. Good quality can be your best selling point; laxity in quality can easily be the sales stumbling block. Fortunately, dairy technology has advanced so that quality control can be obtained and maintained with small effort on the part of management.

Pasture for Pork

A pasture or succession of pastures that keeps lush forage before the pigs for the entire growing season is one of the most efficient and profitable arrangements on the hog farm. An acre of pasture at the University of Wisconsin has been found to save 1,800 pounds of corn and 500 pounds of tankage.

Pasture and leafy green hay make excellent combinations with corn, oats and other farm grains in hog rations. The combinations are good with or without the ordinary protein supplements, whether these are mainly oil meals, tankage or still other protein feeds. What the concentrates lack, the forages have, at least in most cases.

Pasture or forage is probably more important for breeding stock than for fattening stock, if there is to be a choice between the two. Many market hogs have successfully been fed in dry lot away from pasture, using alfalfa meal or stabilized A and D feed with meat scraps or other animal protein.

In winter there is no better pasture substitute than leafy green hay. This had best be ground fine and mixed with feed, unless one buys alfalfa meal or alfalfa leaf meal already prepared, with a high protein and carotene guarantee.

— Gus Bohstedt, University of Wisconsin

The average U. S. citizen eats about a ton of food each year, or about 15 times his own weight. Included in this consumption are 150 pounds of meat, more than 100 pounds of sugar, and 100 cans of canned food.

BEEF CATTLE

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Farm Business Management— By Robertson and Woods. 1951. 546 pages, 248 illustrations. J. B. Lippincott. Prepared for use in all farm management and marketing courses. Combines the most up-to-date and authoritative content with the best farming practices available today in the field of farm management $3.80

The Hog Annual— Published by Farm Quarterly Magazine. March, 1952. Approximately 500 pages. First complete hog annual ever published. Contains names of all breed associations, secretaries, pig hatcheries, livestock yards, livestock commission salesmen, all of the hog farmers who sell over 400 hogs a year—fine articles on housing, sanitation, breeding and farrowing ...$5.00

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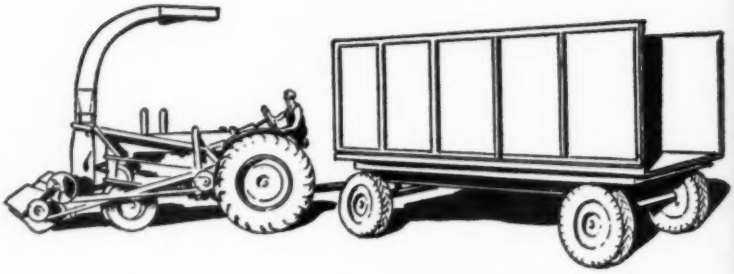

Is This Your Next Forage Harvester?

A radically new type of forage harvester, which eliminates the conventional sickle-bar and cutter head, is being hailed by agricultural engineers as a real boon to grassland farmers. Based on a new cutting principle, the new machine uses several dozen swinging knives mounted on a rotating shaft, like an extra wide hammer-mill.

The present model cuts a swath 78 inches wide but, with a longer shaft, would take an even wider cut. It operates more effectively on brushy and uneven fields than do sickle-bar models, and there will probably be fewer repairs. In addition to harvesting grass silage and field-cured hay, it works well in straw, corn stalks, and similar tough, dry materials. It will also be useful in clipping pastures and cutting brush.

First developed by engineers of the Lundell Manufacturing Co. of Cherokee, Iowa, the new harvester was improved upon by farmer-engineer W. D. Caldwell. He produced a satisfactory cutting knife, or hammer, and built the front mounted machine illustrated above which did an excellent job. A smaller, pull-behind model will probably be developed.

Condensed from Crops & Soils, March 1953

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